

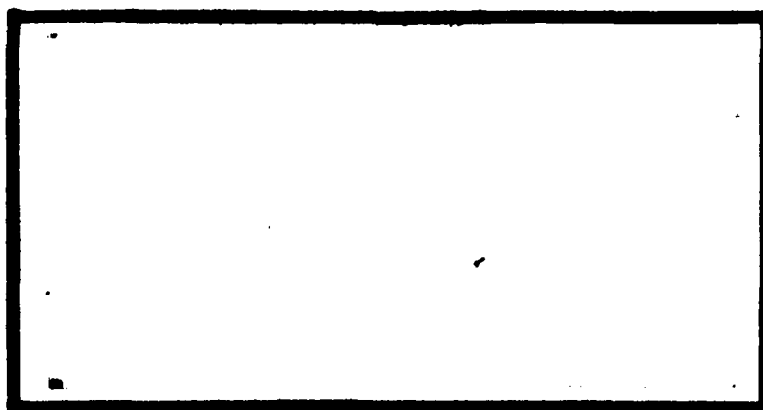
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PROJECTION OF AIRCREW AVAILABILITY  
USING VARIABLE ALERT TOUR  
LENGTH MODELS

Thomas W. Ittig, Captain, USAF  
Daniel C. Kievlan, Captain, USAF

LSSR 38-81

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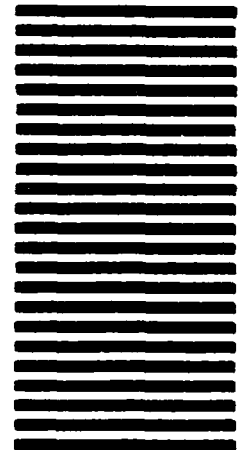
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SAC Wing Commanders have the option of implementing alternative schedules to the present seven day alert system. Currently, unit schedulers do not have methods for developing or analyzing feasible alternative schedules, or for analyzing the impact that various schedules will have on the number of available training days within the unit. This research developed a system utilizing a charting process to model variable alert tour length schedules. Ultimately, the seven day alert system was verified to yield the maximum number of available duty days. This conclusion was reinforced when the parameter used to model the number of mission ready crews, at the wing level, was altered to reflect the difference between the number of authorized and assigned crews typically encountered in an operational environment. An alternative schedule, superior to the current seven day alert system in terms of number of available duty days, was produced. It incorporates several changes to existing scheduling practices and, because of this, is only suggested for use in the event of a period of heightened international tensions.

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PROJECTION OF AIRCREW AVAILABILITY  
USING VARIABLE ALERT TOUR  
LENGTH MODELS

A Thesis

Presented to the Faculty of the School of Systems and Logistics  
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Logistics Management

By

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June 1981

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This thesis, written by

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and

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has been accepted by the undersigned on behalf of the  
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fulfillment of the requirements for the degree of

MASTERS OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 17 June 1981

Thomas C. Hamington  
COMMITTEE CHAIRMAN

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The ultimate expression of appreciation must be given to each and every combat crewmember throughout the Strategic Air Command. It is through their dedication and unceasing service that our society has enjoyed the peace and prosperity that we currently possess.

Finally, we must acknowledge the direct contributions of our thesis chairman, Major Thomas C. Harrington, for his diligent review of the many revisions of this research. Also to Jean, Jeff, and Laura who many times wondered when and if this twelve month program would ever reach its conclusion.

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## CHAPTER 1

## INTRODUCTION

Background

The Strategic Air Command's basic goal for manned aircraft is to maintain mission-ready aircrews and aircraft as a credible deterrent (1:5). The three basic SAC aircraft systems are the B-52, FB-111, and KC-135. The B-52 models currently deployed are the D, G, and H, which are distributed among seventeen bombardment wings. The KC-135 aircraft are distributed throughout twenty-seven active duty wings and eight Air Force Reserve/Air National Guard wings.

Each of these aircraft is assigned a strategic nuclear ground alert role. While assigned to ground alert, some of the aircrews and aircraft resources at each SAC wing serve as a quick reaction strategic force (6:3). This force is maintained at a constant and permanent level through the periodic rotation of each unit's aircraft and aircrew resources. Separate schedules are maintained for aircraft and aircrew alert requirements. Currently, aircraft are assigned to ground alert for periods of approximately sixty days. Aircrew members are scheduled for ground alert using seven-day intervals, which begin every Thursday for each crew.

After completion of the alert tour, each crew receives Combat Crew Rest and Relaxation (CCRR) time equal to one-half of the period spent on alert which is equivalent to three and one-half days (12:2-9). The aircrew cannot be scheduled for any military duty during this time. Because CCRR ends at 2000 hours on Sunday, effectively, crews are not scheduled for normal duty until 0800 hours on Monday. This procedure does lead to stability within the schedule, however, the number of duty days available for aircrew training purposes may not be maximized.

In January, 1980, Eighth Air Force (8AF) made its initial recommendations to Headquarters SAC (HQ SAC) Deputy Commander for Operations (DO) for proposed changes to alert management rules as specified in SAC Regulation (SACR) 55-43. These recommendations were made to provide greater flexibility for the unit wing commanders in establishing their local alert tour length requirements. By doing so, it was proposed that more evenly spaced tours could be realized for the aircrews. The second, and more significant, advantage was that alternate options would provide an opportunity for optimizing continuity of training (5). Continuity of training can be defined as the aircrew flying sorties which could be more uniformly distributed throughout the training period.

HQ SAC's response, contained in its message of 19 Feb 80, was that the alert management rules be changed to incorporate the following (3):

- a. CCRR must be equal to at least fifty percent of the total time spent on alert. The day CCRR

commences will be determined by the unit commander. Total accrued CCRR will be granted at that time. Granting of CCRR may be deferred until a minimum of seven and a maximum of nine days of alert have been completed.

- b. Crew rest requirements are decreased from twelve hours to eight hours.

Subsequently, 8AF issued a message on 22 Feb 80 concerning the waiver to the existing alert management rules (4). This message delineated 8AF guidance concerning the implementation of these changes.

The above waivers significantly alter the manner in which CCRR can be administered. The request to delete CCRR for the one day tour was not approved. So, regardless of the tour option selected, CCRR will accrue; however, (it) can be deferred, but aircrews must be given their total accrued CCRR before the tenth day of alert under any condition. Within these parameters, unit commanders may exercise a wide degree of freedom in fulfilling their alert commitment. These changes to the alert management rules give you and your unit commanders the flexibility to develop alert tour cycles which will be best for an individual unit.

When the declarations from 8AF arrived at the unit level, there was not any accompanying guidance for the individual unit schedulers regarding how to implement the new policy. Consequently, 8AF units did not implement the variable alert tour length option. This was due, in part, to the unknown variables that would be encountered under the flexible scheduling system as contrasted with the known constraints of the present seven-day system. This resistance to change was amplified by the critical lack of time available for the individual unit scheduler when constructing the monthly

operations plan, which is the foundation for the unit's alert scheduling system. The normal development of the monthly operations plan is very taxing on the skills and time of even the most experienced unit scheduler, leaving no time available to experiment with new scheduling options (7). This was the most critical factor in the lack of implementation of the new scheduling options.

If a programmed scheduling system can be made available to the unit scheduler, two important benefits will be achieved. First, the foundation of the variable alert scheduling system will already be established in the scheduler's monthly operations plan, which saves valuable time. Second, the new guidance issued by HQ SAC can be tested and verified and made available for unit implementation. With these results the practicality and feasibility of the variable alert scheduling system will be demonstrated.

Such a programmed scheduling system can be modeled using a charting process which will be described in Chapter 2. In the following section the assumptions and definitions necessary to construct a variable alert tour scheduling model will be described. This will culminate in the statement of the problem, objectives, and hypotheses of this research project.

### Scope

The scope of this study can be stated in terms of assumptions and limitations that will be used in modeling a variable alert scheduling system. While the system is applicable to all SAC units conducting strategic ground alert,

we will specifically focus on those units with B-52 aircraft. Additionally, we will use a model constructed with the parameters typically found in a B-52G wing. This limitation is made because while all SAC B-52 units maintain strategic nuclear ground alert, other B-52 models, particularly the H model, have a larger percentage of crews and a greater number of strategic ground alert sorties to maintain. While these units can utilize a variable alert system as effectively as the G model units, the focus will be on the G model wing because of its inherent stability and convenient adaptability to this system.

Furthermore, the study is aimed exclusively at quantitative aspects of the variable alert scheduling system. Our concern is with numerical distinctions between the number of available duty days that can be programmed by the present seven-day system and alternative systems to be developed. This study will not be bound by any pre-determined percentage figure of increased availability of duty days between the present system and any alternative system.

Our study will not examine any qualitative aspects of the variable alert scheduling system versus the present seven-day alert scheduling system. Such qualitative aspects would include: effect on morale of the aircrew members; willingness of unit schedulers to implement the new system with its given parameters; and how the individual units will utilize any additional duty days which may be gained under a new system. The most critical factor, of course, is the



degree to which the individual aircrew member will accept or reject any new system. Because these changes will be implemented at the unit level and the unit commander is given flexibility to develop alternate tour lengths, we must assume that the variable alert scheduling system will be accepted without consternation by the aircrew member. An important point to be examined, subsequent to this study, will be the anticipated expectations of the degree of acceptance at the local unit level. Without the support of both the unit schedulers and the aircrew members, the success of the entire program is questionable. This question, however, will not be addressed in the scope of this study.

The basic definitions and assumptions of the research are:

a. Lines of alert--defined as the number of B-52 aircraft placed in a strategic nuclear strike configuration to respond immediately upon proper notification (12:1-1). Alert aircraft must be manned around the clock. SAC aircrews are mated to each of the aircraft for a specified time period which is referred to as an alert tour for those particular aircrews. Crews are assigned alert for up to seven consecutive days and they must stay close to their aircraft because they must be able to launch these aircraft within a strictly controlled time interval.

b. Fixed wing structure--this implies the resources which are available to an average G model wing to include 18 mission-ready crews, four lines of strategic nuclear ground alert, and fourteen B-52 aircraft (6:15). The assumption of

eighteen mission-ready crews is based on the number of crews authorized by SAC manning documents. In almost every unit, however, the number of existing mission ready crews is fewer than the authorized amount. The second phase of the study will address the sensitivity of the model to the limited number of mission-ready crews found in nearly all SAC B-52 units. The number of lines of alert must be maintained at four at the wing level. Any deviation from this level is solely authorized and controlled by the highest levels of SAC (12:2-2). We will assume that the fixed number of lines of strategic nuclear ground alert is mandatory.

c. Available duty days--may be defined as any day that an aircrew or aircrew member may be scheduled for any required military duty. Available duty days do not include:

- 1) Saturdays and Sundays
- 2) Leave periods
- 3) Temporary Duty Assignments (TDY)
- 4) Days Spent on Alert
- 5) Days Spent on CCRR

The available duty day at the unit level is used for the accomplishment of aircrew training requirements. These requirements are fulfilled primarily through the use of inflight bomber training sorties. The actual scheduling of when these training sorties occur will not be incorporated by the model. The utilization of the individual available duty days to meet mission planning, ground training, and inflight training requirements will still be at the discretion of the unit

level scheduler. To increase aircrew proficiency the unit scheduler must take into account the following variables (11:7-2): total sorties per crew, distribution of sorties to crews, individual training items per aircrew member, extent of crew coordination, diversity of sorties, and many other factors. Because of the number of variables involved in each unit's operations, it is essential that the unit scheduler retain the flexibility to make maximum use of the available duty days to realize the objectives of the SAC Continuation Flying Training Program.

d. In the model, fifteen-day leave periods will be programmed for half of the mission-ready crews within the wing. During a six-month period every crew member must be authorized fifteen days of leave to be used at his discretion. Since the model encompasses a three-month scheduling period, only one-half of the crews can be illustrated during the total six-month leave cycle. Those crews not programmed for leave during the current scheduling quarter will receive their authorized leave in the upcoming scheduling quarter.

e. Unit of time measurement--a time period of one quarter of the fiscal year is specified because it is the standard chronological planning interval used by SAC to meet all recurring training requirements for aircrew members as outlined in the SACR series (11:1-1).

f. The concept of flight integrity is the sub-division of the bombardment squadron into organizational units known as flights. There are three flights, having an equal number

of crews, within each squadron. Additionally, there is a standardization/evaluation (STAN/EVAL) division normally consisting of three crews which administer inflight and ground training examinations to the remaining fifteen crews within the wing (13:5). The scheduling of alert tours for standardization/evaluation crews is considered separately from the scheduling process for the remaining flights. Each of the four lines of alert is maintained by integral flights the majority of the time. However, when a flight cannot maintain all four lines of alert, due to one of its crews being on leave or TDY assignments, a STAN/EVAL crew will supplement the flight during the alert tour. To provide occasional relief of the constant resumption of alert duty every third tour, STAN/EVAL crews will be periodically substituted for integral flight crews.

g. Individual crew member TDY assignments will not be programmed into the alert scheduling model. All short TDY assignments, those less than or equal to thirty days, are dealt with by scheduling an individual crew member as a replacement for the absent crew member for that alert tour or portion thereof (14:A6-3). Personnel TDY in excess of thirty days are removed from their mission-ready crew and placed in spare status. This category of personnel is not used when constructing the alert schedule and, therefore, is not addressed by our model.

h. Variable alert tour lengths will be limited to those in which the consecutive days spent on alert is

between two and six. For example, a variable alert tour length model designated as 3/3/3 can be illustrated in the following manner. A flight assumes alert for a three-day period after which the next two flights assume alert for three-day periods successively. Only upon completion of nine days of alert will the first flight receive its CCRR. Similarly, as each of the other two flights accumulates nine days of alert, they will receive their CCRR (3). A similar process applies to other variable alert tour lengths. In the case where only two segments of alert duty are used, for example 4/3, the first digit represents the number of days on alert each flight would serve successively. Thus, in the 4/3 model, each flight would be on alert for 4 days successively, during the first phase. The second digit represents the second phase of the cycle in which each of the flights would be on alert for a three day period. Additionally, a letter suffix will be placed after the variable alert tour model designator to indicate which particular day of the week the model will start. For example, A denotes a model beginning on Thursday, B on Friday, C on Saturday and D on Sunday. By adding the number of days identified by a particular variable alert tour length model, the number of total days spent on alert prior to granting of CCRR can be determined. The reason that clusters of days smaller than two and greater than six will be excluded from the model is that when combinations of 7/2 or 8/1 are incorporated into the model, the CCRR process overlaps the three flights forcing the system into the non-availability of any crews

to assume alert. For example, after "A" flight has completed its 7/2 total, it begins its four and one-half days of CCRR. "B" Flight and "C" Flight begin their respective CCRR, following "A" Flight, in two-day increments. In this scheduling model "A" Flight must return to alert when "B" and "C" Flight successively complete their two days of alert. "A" Flight, however, must complete its last half-day of CCRR. This means there are no crews available to cover this half-day of alert. A 9/0 schedule will not be used because HQ SAC has declared that alert tour models are prohibited from using any quantity greater than seven consecutive days of alert.

#### Problem Statement

A need exists to modify the current SAC aircrew alert schedule to increase the amount of available duty days which may be used during the quarter to fulfill required training activities. This need exists owing to the increased number of aircrew training sorties that were dictated by HQ SAC with the implementation of Operations Plan 78-10. This program increased the number of aircrew training sorties from three to four per month. With this increase virtually all available duty days are filled with mission planning of flying activities for all crews in between their alert tours.

#### Objectives

The objectives of this research are:

- 1) To evaluate variable alert tour lengths designed

to increase the time available to accomplish mission-ready aircrew training requirements in fulfillment of the SAC Continuation Flying Training Program.

2) To test the effect of parameter changes on the programmed quarterly alert flow. These changes will incorporate conditions, such as relaxing the assumption of eighteen mission ready crews, which are more indicative of the current structure actually found in the typical B-52 wing.

### Hypotheses

Three research hypotheses will be tested:

1) Through the use of variable alert tour lengths the average number of available duty days will be increased. The consecutive day alert tour lengths, to be tested for optimality are as follows:

- a) 2/3/2 A,B
- b) 4/3 A,B,C
- c) 4/4
- d) 3/3/2 A,B
- e) 3/5 A,B,C
- f) 3/3/3 A,B,C
- g) 4/5 A,B,C,D
- h) 3/6 A,B,C

2) The current seven-day alert scheduling system allows the maximum number of available duty days in contrast to any of the variable alert tour length models.

3) Variable alert tour scheduling will allow for greater flexibility to adapt to conditions which occur

in a B-52 wing, such as sixteen versus eighteen mission ready crews.

### Literature Review

One of the most difficult challenges that has been encountered has been the scarcity of data available on the scheduling of human resources in a variable manner to achieve a specific stated program objective. The literature predominantly focuses on limited resource scheduling models found in manufacturing environments. While many useful models and tools have been developed, such as Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT), their use is primarily as management tools for scheduling and controlling project systems. These methods do not readily adapt themselves to the scheduling process required in the continuous assignment of alert within the B-52 wing.

Even within the official documentation issued by SAC, the programming and scheduling of crew resources assigned to the B-52 aircraft have always been decentralized to the wing level (6:14). The only SAC requirement is that a specific number of lines of alert be maintained at a constant state of readiness by the individual unit. This requirement has resulted in the development of local alert scheduling procedures only within the guidelines of SACR 55-43 (12:2-1). This regulation identifies the broad criteria that must guide the local unit scheduler, but does not provide a methodology or procedure for scheduling.



For example, if a crew change to a previously published alert schedule must be made, SACR 55-43 delineates the documentation procedures that must be followed, but it is up to the unit level scheduler to determine which crew will be tasked with the substitution.

In the course of our literature review several documents were found, while not pertaining directly to B-52 alert scheduling procedures, that did address resource allocation problems in SAC. A RAND report entitled Scheduling Aircrews and Aircraft: Problems of Resource Allocation in the Strategic Air Command, by Berman (1), was the first attempt to model the B-52 wing and develop a set of predictive hypotheses to improve resource allocations. Among his major findings were (1:vii):

1. The level of aspiration for quality in judgmental activities depends heavily on resources available.
2. Slack resources result from attempts to avoid uncertainty.
3. Slack resources are developed to reduce conflict between subgroups.

Berman forecast the development of a system to mechanize the schedule building process which would imitate the rules used by schedulers. This would be incorporated in a computer system referred to as Decision Oriented Scheduling System (DOSS) which at the time of this study was under development at the RAND Corporation. The use of DOSS permits the wing level scheduler to foresee the effects of scheduling decisions prior to their implementation.

This ability was demonstrated in the most recent research to date, that by Fallon (6) entitled Rule Based Modeling as an Analysis Tool: Implications for Resource Allocation Within the Strategic Air Command. This study was the direct outgrowth of Berman's research and tested the application of DOSS at two SAC wings in the context of the B-52 Aircrew Training Continuation Test Program. Using DOSS, several rule and policy changes concerning aircraft and aircrew scheduling parameters were hypothesized to examine if an increase in aircraft and aircrew availability for flying was feasible. For example, using shortened mission planning prior to all sorties and reducing the basic turn-around time on an aircraft between two sorties, DOSS examined whether more sorties could be generated in a given week. Fallon's (6:vii) finding was:

Increased levels of sorties and alert are possible given current aircrew resources, provided that certain rule and policy changes to increase aircrew availability are adopted. In one case, DOSS scheduled a 12.5 percent increase in total sorties for a three-month period, along with increasing the alert force from four to five aircrews on alert.

Among projected uses of DOSS are its application as a wing level scheduling aid and as an instrument to enhance the training of wing schedulers. While DOSS is a rule based modeling system used to improve organizational decision-making, SAC is considering its use as an analysis tool at the headquarters level.

The most promising development for modeling scheduling systems at the unit level has been the Automated Missile Operations Management System (AMOMS) currently in operational use at the 351st Strategic Missile Wing, Whiteman Air Force Base, Missouri (2). This system began in 1974 with the work of 1Lt Michael Bush in conjunction with the AFIT Minuteman Education Program (MMEP) at Whiteman AFB. This was the first attempt to combine the data management procedures of the manual system into a series of programs which could be accomplished in a more efficient manner using a computer. First, an information system was developed which contained the personal data of all crew members, data concerning organizational identification codes, and a performance data subsystem including alert statistics, training data, and performance evaluations (2:63). The second, and pivotal element, is the scheduling system which utilizes data provided by the information system to generate monthly and weekly schedules (2:64). This system possesses excellent capabilities for handling routine repetitive operations scheduling, but a manual alert input had to be developed. "This system became necessary when it was observed that even a good schedule generated by the computer could quickly become obsolete given the need to modify a few alerts and these changes not provided to the computer (2:48)." It is precisely this area which has proven to be most difficult to incorporate into an automated data system.

A subsequent project was undertaken the following year by 1Lt Mark S. Wegehaupt to further develop the AMOMS (15).

This effort was brought about by the change in Minuteman missile alert tour length from thirty-six to twenty-four hours (15:4). Because of this change many of the algorithms advanced for the first study had to be modified to account for the shorter amount of time existing between successive alert tours. It also embodied an alert tour scheduling system which was ninety-five percent effective in meeting the number of required alert tours scheduled to be filled by missile crew members each month (15:3). One advantage that was sacrificed in this system, however, was the scheduling of integral flights of crews for a new system utilizing alert groups. The primary distinction among the groups was whether the crews within a group were participating in the AFIT MMEP. The schedule was built to optimize the number of crews that could participate in AFIT classes that were scheduled on alternating weekdays.

In January 1978, 1Lt Danny Marrs produced the next iteration in the development of the AMOMS (8). During the prior two phases of the system, all data input was accomplished using a remote CRT terminal located at the 351st SMW operations office which was connected to the IBM 370 computer system at the University of Missouri (8:2). At the beginning of October 1977, funding was no longer provided for the use of the CRT terminal. Therefore, continued use of the system required the development of a batch (card) input system. 1Lt Marrs devised this batch input capability, which allowed the continued use of AMOMS and resulted in a cost reduction

of over 1,200 percent (8:2). This process illustrates that the continued development of automated scheduling systems can be realized even when challenged with scarce financial resources.

The system has not progressed to the point at which it is adaptable for use on the current generation of micro-computers. The 351st SMW is now using a TRS-80 (10) to completely process the AMOMS, which formerly had been executed by the IBM-370. It is presently undergoing a one-year test to validate the applications of the system on a micro-computer with its associated reduction in cost. Should this test be successful, it is anticipated that the AMOMS will be implemented at the other five Minuteman wings. This would be the first automated system used for combat crew scheduling in SAC on a regular basis.

As the literature review demonstrates, to date there have not been any research efforts that have directly addressed the automation of scheduling bomber crew members. There is interest in such a system at the HQ SAC level, and Major William Mitchell (9), Operation Systems Management Division, has confirmed that an initial system is under development. Major Mitchell's effort, at this time, is in the formulation stage. Any automated scheduling models developed will be directly beneficial to overall progress in this field. Similarly, at Eighth Air Force, interest has been shown and Major Ron Jones (7) has made available all references and models developed by his office in their studies of suggested changes to alert management rules and shortened alert tour options.

## CHAPTER 2

### METHODOLOGY

#### Introduction

As noted previously, SAC is currently using a fixed length alert scheduling system consisting of seven consecutive days of alert. By incorporating the flexibility provided by the recent changes in SACR 55-43, several different models of variable alert tour length scheduling will be examined. The purpose of this study is to determine if an increased number of available duty days can be realized through variable alert tour length scheduling.

The authors are both familiar with the alert tour scheduling process currently used throughout SAC. Their combined experience in both aircraft and missile combat crew operations of over eight years has given them an in-depth understanding of the complexities of alert scheduling. Additionally, one of the authors spent over two years as a Bomber Mission Development Officer responsible for the scheduling of all crew alert tours within a B-52 wing.

#### The Present Seven-Day Alert System

In order to determine if variable alert tour length scheduling will increase the number of available duty days in comparison to the fixed length alert scheduling system, models of each system will be developed in this research.

The seven-day alert system revolves around the concept of flight integrity in establishing the basic model. This process is developed by combining the following elements: the number of lines of alert which must be maintained, the number of flights available for duty, and the length of the alert tour itself. The results of this effort are depicted in Figure 2-1. The charting process used to construct this and the variable length alert scheduling models will be discussed in a subsequent section of this chapter.

In developing the fixed length alert scheduling model, the squadron is divided into three flights, each containing five crews, and a STAN/EVAL flight consisting of three crews. Each flight is responsible for manning all four lines of alert during the period when the flight is scheduled for its seven-day alert requirement. This alert cycle always begins on a Thursday, terminating on the following Thursday when the next flight assumes the alert requirement. The relieved flight then begins its three and one-half days of CCRR during which time it cannot be scheduled for any military duty. This sequential process is illustrated in Figure 2-1. "A" Flight, crews S-11 through E-15, assumes alert on Thursday, 1 January 1981, followed by "B" Flight, crews S-21 through E-25, on 8 January and "C" Flight, crews S-31 through E-35, on 15 January.

The participation of STAN/EVAL crews in the alert tour cycle is shown in Figure 2-1 on 22 January when crew S-01 assumes one of the lines of alert with "A" Flight.

FIGURE 2-1

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend A - Alert O - CCBR L - Leave T - Temporary Duty		MONTH																																						
				JANUARY																																						
				Alert Duty Days Available Duty Days Non Available Duty Days																																						
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR				
S-01																																										
S-02																																										
S-03																																										
S-11																																										
R-12																																										
E-13																																										
R-14																																										
E-15																																										
S-21																																										
R-22																																										
R-23																																										
E-24																																										
E-25																																										
S-31																																										
E-32																																										
R-33																																										
R-34																																										
E-35																																										
TOTALS																																										

ONE TIME FORM

Sevel Day Alert Tour Model



FIGURE 2-1

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																												
	A - Alert O - CCRR L - Leave T - Temporary Duty																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
S-01	O	L																											
S-02																													
S-03																													
S-11																													
R-12																													
E-13																													
R-14																													
E-15																													
S-21																													
R-22																													
R-23																													
E-24																													
E-25																													
S-31																													
E-32																													
R-33																													
R-34																													
E-35																													
TOTALS																													

ONE TIME FORM

Seven Day Alert Tour Model

FIGURE 2-1

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCR L - Leave T - Temporary Duty	MONTH																															
			MARCH																															
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR
18 - 7			0	7	22	45	9	45																										
S-01																																		
S-02																																		
S-03																																		
S-11																																		
R-12																																		
E-13																																		
R-14																																		
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E-24																																		
E-25																																		
S-31																																		
E-32																																		
R-33																																		
R-34																																		
E-35																																		
TOTALS																																		

ONE TIME FORM

Seven Day Alert Tour Model

Normally, crew S-01 will be linked with "A" Flight, crew S-02 with "B" Flight and crew S-03 with "C" Flight. This association is particularly important because of the necessity of planning for leave periods for each flight.

A typical scheduling procedure for establishing leave periods is to form an alert/CCRR/leave relationship so that the flight's fifteen day leave cycle will begin immediately following a seven-day alert tour and its accompanied CCRR. This, in effect, will allow the individual crew member to have nineteen days of leave should leave commence the first day of CCRR. To prevent complications arising from the random scheduling of leave for STAN/EVAL crews it is necessary to match each STAN/EVAL crew with a particular flight for scheduling its leave. Thus, when crew S-01 assumes alert on 22 January and receives its CCRR beginning on 29 January, it will then begin its fifteen day leave period on 2 February which would normally be given to one of the crews on "A" Flight. Leave scheduling for specific crews during any particular leave cycle is delegated from the unit scheduler to the squadron and flights. However, the scheduler must know which crews have selected which dates for leave at least four months in advance. This is necessary in order to construct a basic alert/leave cycle for the forthcoming quarter and to assure as equitable a distribution of alert days as possible. The distribution of alert days is indicated by the cumulative figures for the first quarter ending in March shown in column two,

"ALERT DUTY DAYS QTR" of Figure 2-1. Finally, during a six month period, 26 blocks of leave would be available for the eighteen crews, which means that thirteen blocks of leave are available during a quarter. Only nine of the blocks will be distributed among the crews during the quarter so that at the end of the six month period each of the eighteen crews will have received one block of leave.

Generally, during the period of a quarter, the squadron must respond to an average of three TDY assignments. The nature of these assignments may include combat crew competitions, higher headquarters training missions such as RED FLAG, or transporting aircraft to other units or to depot. These assignments are illustrated in Figure 2-1 by the seven-day periods designated by the letter T. One seven-day TDY assignment is incorporated into each month of the quarter.

#### Development of Charting Process

To develop a schedule using any particular alert scheduling model, a charting process is used. This is a series of steps which will result in a completed schedule that summarizes the number of days each crew is available for other duty. A one-time form was designed for this research, an example of which is shown in Figure 2-1, and is used in the charting process. This process consists of the following steps:

- 1) Determine the quarter to be scheduled and identify the total number of days present in the specific

three month period. When comparing various alert tour length models, the same three month quarter should be used to ensure that the total days available remain constant. For example, a schedule covering the first calendar quarter, January through March, encompasses a total of 90 days. Another schedule may cover the July through September quarter which consists of 92 days. Because of the difference in total number of days within a quarter, a comparison between the total number of available duty days under the two schedules would not be valid.

2) Identify all weekends and federal holidays.

This is required because these days are not considered to be available duty days. Such days are highlighted on Figure 2-1 by the circled numbers across the top of the form. The federal holidays that are taken into account by the various scheduling models to be used include New Year's Day, Veteran's Day, Washington's Birthday, Memorial Day, Labor Day, Independence Day, Columbus Day, Thanksgiving and Christmas.

3) Determine and list the number of crews available within each flight. STAN/EVAL crews are listed separately from the flights and are always designated by S-01, S-02 and S-03. "A" Flight will always consist of crews S-11 through E-15, "B" Flight of crews S-21 through E-25 and "C" Flight of crews S-31 through R-35. When the total number of available crews is less than eighteen, crew S-02 and/or E-32 will be deleted.

4) The first parameter to be placed on each crew's schedule will be the 15 day period of leave for those crews that will be taking leave during the quarter. Each flight, plus its associated STAN/EVAL crew, will be given three leave periods. For variable tour length model comparison purposes, three crews within a flight are arbitrarily assigned leave, assuming that during the next quarter, the remaining three crews will receive their leave.

5) Establish the alert tour length model to be tested and implement it beginning with "A" Flight. An X/Y or X/Y/Z model will be used where X represents the number of consecutive days spent on alert by each flight in succession, Y represents the next portion of the alert cycle, and, if applicable, Z represents the final segment of the alert cycle that each flight will spend on alert prior to the beginning of going on CCRR.

6) Begin the successive rotation of the alert cycle among the flights continuing it throughout the quarter. An example of a 4/3 schedule, for instance, would have "A" Flight assuming alert from the first through the fourth day, "B" Flight on alert from the fifth through the eighth day, and "C" Flight from the ninth through the twelfth. The second portion of the cycle begins with "A" Flight on alert from the thirteenth through the fifteenth day followed by CCRR from the sixteenth midway through the nineteenth day. "B" Flight assumes alert for three days, the sixteenth, seventeenth, and eighteenth, followed by their CCRR time. Finally, "C" Flight is on alert for three days, followed

by their three and one-half days of CCRR. The alert cycle begins again when "A" Flight relieves "C" Flight to begin four days of alert.

(7) At the completion of the last day of the month, the number of alert days, available duty days, and non-available duty days will be computed. The number of days of alert for the month per crew is totalled and placed in column one of the form, on the extreme right-hand side. This number is then added to the total for previous months in the quarter to yield a total number of days of alert for the period. For the first month of the quarter, these two numbers in columns one and two, respectively, will be equal. The totals for the number of available duty days and non-available duty days per month and quarter in columns three and four, and columns five and six, respectively, are calculated in a similar fashion. The key distinction between totalling number of days of alert and number of available duty days is that when calculating the numbers of available duty days for any crew, a cross-check for accuracy must be made. First, each square must be unoccupied. Second, the unoccupied square must be cross referenced at the top of its column. If the column is not marked by a circle, this square is then considered to represent an available duty day. Squares representing available duty days for a particular crew are summed across the month and are indicated by the numbers in column three. The number of non-duty days during the month is shown in column five. A non-duty day is one that is spent on leave, CCRR, is a weekend day or a holiday.

Adding columns three and five yields the number of days in the month. This is one of the cross-checks used to guarantee an error free schedule.

8) At the end of the quarter the total number of days of alert, available duty days, and non-available duty days are tabulated on the form. This is done by adding the numbers representing days of alert, available duty days, and non-available duty days for the last month of the quarter to columns two, four, and six, respectively, of the preceeding month. The quarterly figures are then shown in columns two, four, and six of the last month of the quarter.

9) A final cross-check must then be made to eliminate any possible errors in the schedule. The figure at the bottom of column two for the last month of the quarter should be equal to the number of lines of alert times the total number of days in the quarter. For the quarter illustrated in Figure 2-1 there were 90 days in the period and four lines of alert to be manned. This means that the total number of alerts for the period must equal 360. The final total for the number of available duty days during the period, found at the bottom of column four, must equal the sum of the number of available duty days for each month in the quarter. To produce this grand total, add the number at the bottom of column three for each of the months of the quarter.



Similarly, the final total for the number of non-available duty days during the period, found at the bottom of column six, must equal the sum of the number of non-available duty days for each month in the quarter. To produce this grand total, add the number at the bottom of column five for each of the months of the quarter. The number resulting from the addition of the totals found in columns four and six will equal the total number of all days, both available and non-available, in the quarter. The last cross-check in the verification process is to multiply the number of crews by the number of days in the quarter and the resulting figure must equal the number computed by the addition of columns four and six. This insures that every duty day for each aircrew has been incorporated into the development of the schedule and the model is numerically correct.

#### Measures of Effectiveness

The measures of effectiveness, or criteria, used to compare the fixed and variable alert tour length models will be as follows:

- (1) Total number of available duty days for the quarter.
- (2) Average duty days available for STAN/EVAL crews.
- (3) Average duty days available for all other mission-ready crews.
- (4) Average duty days available for all crews combined.

To compute the measure in (2), add the quarterly figures in column four AVAILABLE DUTY DAYS QTR, for each STAN/EVAL crew, then divide by the total number of STAN/EVAL crews. To calculate the measure in (3), follow a nearly identical procedure but exclude the figures in column four which pertain to the STAN/EVAL crews. After the total is obtained, divide by the total number of non/STAN/EVAL crews. The final measure of effectiveness (4), is the summation of all total available duty days divided by the total number of crews.

The measures of effectiveness for the current seven-day alert system are computed as follows, using the information from Figure 2-1.

- (1) The total number of available duty days is 649, which is found at the bottom of column four of the March schedule.
- (2) The average duty days available for STAN/EVAL crews is 47.33. This measure was computed by adding the quarterly duty days from column four of the March schedule for the three STAN/EVAL crews (45+44+53), and then dividing by three.
- (3) The average duty days available for all other mission-ready crews is 33.80. This measure was computed by adding the quarterly duty days from column four of the March schedule for all crews except STAN/EVAL (36+39+...+30) and then dividing by 15.
- (4) The average duty days available for all crews combined is 36.05. This measure of effectiveness was computed by dividing the 649 total duty days by the 18 crews.

These criteria will be compared with the respective results of the proposed eight variable alert tour length

models to determine if a more effective schedule can be developed. The model attaining the highest number of available duty days will initially be chosen as the best model. Further examination, however, will be undertaken to ensure that the distribution of available duty days among STAN/EVAL crews, other mission-ready crews, and the flights is equitable. Table 2-1 summarizes the models to be investigated with the measures of effectiveness indicated by the appropriate symbols.

#### Justification to Eliminate Y/X Models

Alert models which are mirror images, for example 4/3 and 3/4, will result in identical totals of days spent on alert and CCRR at recurring intervals due to the repetitive nature of the scheduling process. However, it is believed that the number of available duty days produced by the mirror images will differ slightly due to the manner in which weekends and CCRR overlap. These differences would appear to be insignificant when examined over the course of a 90 day period. During analysis of the models this factor will be examined to confirm or deny this assumption.

#### Chapter Summary

This chapter describes the manner in which variable length alert tour models will be developed and analyzed with respect to the current fixed length model. The next chapter discusses data generation and analysis.

TABLE 2-1

## MEASURES OF EFFECTIVENESS

Model Designator	Total Available Duty Days ( $T_i$ )	Average ADD for Stan/Eval Crews ( $S_i$ )	Average ADD for NON Stan/Eval Crews ( $C_i$ )	Average ADD for All Crews ( $A_i$ )	Ranking
Straight 7	649	47.33	33.80	36.05	1
2/3/2 A	$T_2$	$S_2$	$C_2$	$A_2$	
2/3/2 B	$T_3$	$S_3$	$C_3$	$A_3$	
4/3 A	$T_4$	$S_4$	$C_4$	$A_4$	
4/3 B	$T_5$	$S_5$	$C_5$	$A_5$	
4/3 C	$T_6$	$S_6$	$C_6$	$A_6$	
4/4	$T_7$	$S_7$	$C_7$	$A_7$	
3/3/2 A	$T_8$	$S_8$	$C_8$	$A_8$	
3/3/2 B	$T_9$	$S_9$	$C_9$	$A_9$	
3/5 A	$T_{10}$	$S_{10}$	$C_{10}$	$A_{10}$	
3/5 B	$T_{11}$	$S_{11}$	$C_{11}$	$A_{11}$	
3/5 C	$T_{12}$	$S_{12}$	$C_{12}$	$A_{12}$	
3/3/3 A	$T_{13}$	$S_{13}$	$C_{13}$	$A_{13}$	
3/3/3 B	$T_{14}$	$S_{14}$	$C_{14}$	$A_{14}$	
3/3/3 C	$T_{15}$	$S_{15}$	$C_{15}$	$A_{15}$	
4/5 A	$T_{16}$	$S_{16}$	$C_{16}$	$A_{16}$	
4/5 B	$T_{17}$	$S_{17}$	$C_{17}$	$A_{17}$	
4/5 C	$T_{18}$	$S_{18}$	$C_{18}$	$A_{18}$	
4/5 D	$T_{19}$	$S_{19}$	$C_{19}$	$A_{19}$	
3/6 A	$T_{20}$	$S_{20}$	$C_{20}$	$A_{20}$	
3/6 B	$T_{21}$	$S_{21}$	$C_{21}$	$A_{21}$	
3/6 C	$T_{22}$	$S_{22}$	$C_{22}$	$A_{22}$	

RANGE — - —

## CHAPTER 3

### DATA GENERATION AND ANALYSIS

#### Overview

The data used for this study was generated by the production of 66 different schedules during the period 5 January 1981 to 17 April 1981. This total of 66 schedules was predetermined in the study's methodology. Consequently, there were 22 different scheduling models produced using scenarios with 18, 17, or 16 crews available for alert duty. These scheduling models are incorporated in Appendixes A, B, and C respectively.

The final number of 66 schedules was determined by first calculating all possible schedules that added up to a total of between seven and nine days of alert. Next, schedules were eliminated that proved to be infeasible in that they would result in periods without any crews available for alert duty. Such an example is a 7/1 schedule. Referring to Figure 3-1, it can be seen that no crews are available to assume alert duty during the period 25-26 January. If the 1/7 version is used, "C" Flight cannot assume alert on 27 January. The use of any other flight on that date would violate one of the fundamental ground rules of the alert scheduling process. Then, schedules were eliminated that had alert periods greater than seven days long. This was because

[illegible]

## Multiple Models for Analysis

the operational guidelines previously established prohibited single periods of alert longer than seven days. These rules eliminated schedules such as 8/0, 8/1, and 9/0. Next, mirror images were eliminated because of the cyclical nature of the scheduling process. For example a 6/2; 2/6 schedule with CCRR following either segment of the alert are the same (see Figure 3-1). In the case of the 6/2 and 2/6 schedules, the number of days of alert and days of CCRR are exactly the same after every 24 day segment. To determine at what intervals mirror image schedules will be equal, total the number of days in the alert tour model designator block, then multiply by the number of flights. Using the 6/2 and 2/6 models this method results in the following:  $6+2=8$ ,  $8 \times 3=24$ . While the 6/2-2/6 model was used to illustrate the concept of mirror images, it was eliminated as infeasible under current conditions because of a conflict among completing CCRR, the requirement for insuring eight hours crew rest prior to assuming alert, and the assumption of alert duty. Using a 6/2 schedule it is impossible for "A" Flight to complete CCRR, have eight hours free, and assume alert. For example, "A" Flight goes on four days of CCRR beginning 21 January at 0830 hours. By 0830 hours on 25 January, the flight must assume alert again, precisely when it is finishing CCRR. Under current policy all crews must have eight hours crew rest prior to assuming alert to include not being on CCRR. In order to work, the 6/2 schedule would have to consistently violate this provision. The mirror image, 2/6, affect "C" Flight in the same exact manner.

Iterations of basic models were determined by the smallest number in the model. For example a 3/6 has three iterations while the 4/5 has four iterations. The purpose the iterations served was to advance the beginning of the alert cycle to account for the slight differences that surface depending upon which day the cycle begins. No model required more than four iterations representing starting the model on four separate days of the week. The reason for this is the repetitive nature of the alert scheduling process.

The straight seven day alert system figures were established as standards for comparison purposes. The reason for this was that the seven day system is currently being used, and all other schedule models should be compared to it to see if any exceed the marks it has established. As was subsequently found, no other model emerged superior to the current scheduling practice.

Four broad criterion measures were used to evaluate the different scheduling models. These were: available duty days possible, incidence of splitting crew rest, incidence of violating flight integrity, and the incidence of any STAN/EVAL crew being on alert over 50% of the regular line crew alert rate. The first criterion was selected because it is the prime focus of this research, which is to determine what schedule yields the maximum number of available duty days. The other three criteria were chosen



because they represent occurrences which must be held to a minimum in an operational environment.

To get a clearer understanding of the total and distribution of available duty days possible, four ways of analyzing the numbers were used. First, schedules were examined solely with regard to total number of available duty days produced. Second, the different models were viewed by the total number of available duty days for STAN/EVAL crews since this measure indicates how much time is available for STAN/EVAL crews to conduct various evaluation activities. For example, if a situation existed in which the total number of available duty days were relatively high, but the STAN/EVAL average of available duty days was relatively low, the implication would be that the STAN/EVAL crews are experiencing a relatively high alert rate. This would not be a desirable situation because it is likely that completion of evaluation activities would be hampered. Third, to compliment the preceding average, averages were obtained for the number of available duty days excluding STAN/EVAL crews. Finally, averages for the number of available duty days for all crews combined were obtained.

#### Available Duty Days (ADD) Possible

As shown in Tables 3-1, 3-2, 3-3, regardless of the number of crews available, the straight seven day alert schedule always yielded the maximum number of available duty days. The differences were sometimes very small. For example, there is only a five day difference in total ADD for the 18

crew wing when comparing the straight seven day schedule, the 3/3/2 A, and the 4/4 models. Nevertheless, the straight seven day alert model consistently produced the maximum number of available duty days.

Another point to be noticed is that the 3/3/2 A model is always ranked second in terms of the total number of available duty days as shown in the last column of the three tables. Furthermore, it is always an extremely close second differing only by one day under the 18 and 17 crew scenarios, and by two days when only 16 crews are available for alert. Depending upon the number of crews available for alert, the third best scheduling model varied among the 4/4, 3/3/2 B, and 3/6 B models. When 18 crews are available the 4/4 comes within five days of the total ADD produced by the straight seven day schedule. Under situations when only 17 or 16 crews are available, the third best schedule still yields seven days less than the straight seven-day alert model.

Just as reasonable consistency is found among these scheduling models producing the highest total of ADD regardless of the number of crews available, a similar degree of consistency is found among those scheduling models that yield the lowest total of ADD. In all instances the 2/3/2 B was found to produce the fewest available duty days. The second worst model, when 18 crews are available, is a tie between the 2/3/2 A and the 4/5 D models. Using the 17 crews situation, the 4/5 D model is tied with the 2/3/2 B for amount of fewest available days. The 2/3/2 A and the 3/3/3 B models

TABLE 3-1

## 18 CREW MODELS

Model Designator	Total Available Duty Days ( $T_i$ )	Average ADD for Stan/Eval Crews ( $S_i$ )	Average ADD for NON Stan/Eval Crews ( $C_i$ )	Average ADD for All Crews ( $A_i$ )	Ranking
Straight 7	649	47.33	33.80	36.05	1
2/3/2 A	600	46.00	30.80	33.33	20
2/3/2 B	596	45.33	30.67	33.11	22
4.3 A	621	48.67	31.67	34.50	
4/3 B	612	46.67	31.46	34.00	
4/3 C	612	46.00	31.00	34.00	
4/4	644	46.00	33.73	35.78	3
3/3/2 A	648	47.67	33.67	36.00	2
3/3/2 B	640	47.33	33.20	35.55	
3/5 A	635	46.00	33.13	35.27	
3/5 B	629	46.66	32.60	34.94	
3/5 C	630	47.00	32.60	35.00	
3/3/3 A	609	44.33	31.73	33.83	
3/3/3 B	603	43.66	31.46	33.50	
3/3/3 C	604	42.66	31.73	33.55	
4/5 A	621	44.66	32.46	34.50	
4/5 B	616	42.00	32.66	34.22	
4/5 C	610	41.00	32.46	33.88	
4/5 D	600	39.66	32.06	33.33	20
3/6 A	624	44.66	32.66	34.66	
3/6 B	630	44.33	33.13	35.00	
3/6 C	632	42.33	33.66	35.11	

RANGE: 649-596

TABLE 3-2

## 17 CREW MODELS

Model Designator	Total Available Duty Days ( $T_i$ )	Average ADD for Stan/Eval Crews ( $S_i$ )	Average ADD for NON Stan/Eval Crews ( $C_i$ )	Average ADD for All Crews ( $A_i$ )	Ranking
Straight 7	598	47.00	32.64	35.64	1
2/3/2 A	552	44.33	29.92	32.47	19
2/3/2 B	548	43.00	29.92	32.23	21
4/3 A	567	46.00	30.64	33.35	
4/3 B	563	46.00	30.35	33.11	
4/3 C	561	44.33	30.57	33.00	
4/4	589	44.66	32.50	34.64	
3/3/2 A	597	45.66	32.85	35.11	2
3/3/2 B	589	45.66	32.28	34.64	
3/5 A	583	45.33	31.92	34.29	
3/5 B	578	45.33	31.57	34.00	
3/5 C	578	44.00	31.85	34.00	
3/3/3 A	557	42.00	30.78	32.76	
3/3/3 B	552	43.66	30.07	32.47	19
3/3/3 C	553	43.66	30.14	32.53	18
4/5 A	572	43.33	31.57	33.64	
4/5 B	565	43.33	31.07	33.23	
4/5 C	555	41.33	30.78	32.64	
4/5 D	548	40.00	30.57	32.23	21
3/6 A	569	42.66	31.50	33.47	
3/6 B	591	43.33	32.92	34.76	3
3/6 C	579	44.33	31.85	34.05	

RANGE: 598-548

TABLE 3-3

## 16 CREW MODELS

Model Designator	Total Available Duty Days ( $T_i$ )	Average ADD for Stan/Eval Crews ( $S_i$ )	Average ADD for NON Stan/Eval Crews ( $C_i$ )	Average ADD for All Crews ( $A_i$ )	Ranking
Straight 7	536	48.50	31.35	33.50	1
2/3/2 A	483	42.50	28.42	30.18	21
2/3/2 B	478	41.50	28.21	29.87	22
4/3 A	502	44.50	29.50	31.37	
4/3 B	502	45.50	29.35	31.37	
4/3 C	502	44.00	29.57	31.37	
4/4	529	48.50	30.85	33.06	3
3/3/2 A	534	43.50	31.92	33.37	2
3/3/2 B	529	44.00	31.50	33.06	3
3/5 A	520	43.50	30.92	32.50	
3/5 B	517	44.50	30.57	32.31	
3/5 C	516	43.50	30.64	32.25	
3/3/3 A	493	41.50	29.28	30.81	
3/3/3 B	494	44.50	28.92	30.87	
3/3/3 C	498	46.00	29.00	31.12	
4/5 A	509	47.00	29.64	31.81	
4/5 B	501	44.50	29.42	31.31	
4/5 C	502	43.00	29.71	31.37	
4/5 D	490	41.50	29.07	30.62	20
3/6 A	506	43.50	29.92	31.62	
3/6 B	515	44.50	30.42	32.18	
3/6 C	520	45.50	30.64	32.50	

RANGE: 536-478

are tied for being the next to worst model in this situation. When only 16 crews are available for alert duty the 2/3/2 A is the second worst model while the 4/5 D is the third worst model.

There is greater variation in terms of total number of ADD between the three worst schedules than there was between the three best schedules. When 18 crews are available there is a difference of four days between the two worst schedules and a difference of three days between the second and third worst schedules. When the wing is composed of 17 crews, there is a difference of four days between the two worst schedules just as there was in the previous case. Between the second and third worst schedules, however, there is only a one day difference. When placed in the 16 crews scenario there is a difference of five days between the two worst schedules as well as a difference of seven days between the second and third worst schedules.

The following was also noticed when comparing the numbers of total ADD. At the top end of the range there was only one tie and it occurred when 16 crews were available using either the 4/4 or 3/3/2 B schedules. These were tied for the third best schedule. At the bottom end of the range there were three ties among schedules. The ties occurred for second worst schedule between the 2/3/2 A and the 4/5 D within the 18 crew setting; between the 2/3/2 B and the 4/5 D for worst schedule with 17 crews available; and between the 2/3/2 A and the 3/3/3 B for second worst schedule,

also when 17 crews are available. Additionally, it is noticed that there is a range spread of 53 days with 18 crews available, 50 days with 17 crews and 58 days with 16 crews.

The second perspective taken regarding available duty days concerns their distribution. For this reason averages were computed for STAN/EVAL crews, line crews, and for the crew force in total. In general, because of the ground rules established, it was expected that the STAN/EVAL average would be higher than that of the rest of the crew force and this is precisely what happened. Furthermore, there appears to be no notable distinction in the difference between the STAN/EVAL and line crew averages at either end of the total ADD spectrum. For example, the differences between the two averages for the top three schedules with 18 crews available are 13.53, 14, and 12.27 days, respectively. For the two schedules tied for second worst under the 18 crew wing the differences are 15.2 days for the 2/3/2 A and 7.6 days for the 4/5 D. To complete this analysis there is a 14.66 day difference for the worst schedule and a 12.2 day difference for the third worst schedule. Similar numbers are found in comparing the top three and bottom three schedules for both the 17 and 16 crew scenarios. This was expected because an effort was always made to limit the STAN/EVAL alert rate to 50% or less of the line crew alert rate. For the same reason, there is little difference between the STAN/EVAL average and line crew average differential when compared across the 18-17-16 crew spectrum. To illustrate, the 3/3/2 A has a

14 day difference between STAN/EVAL and line crew averages with 18 crews available, a 12.81 day difference using 17 crews, and a 11.58 day difference using 16 crews. Significant changes are noted when a model, such as the 4/4, is compared across the 18-17-16 crew range. When 16 crews are available the differences increase significantly. This is due to the necessity of having to borrow a crew from another flight to fulfill an alert requirement in order to minimize the demands on STAN/EVAL.

Another point to notice is that a few schedules actually exceed the values of the criteria set by the straight seven-day schedule. This is accounted for by the way in which STAN/EVAL crews were used to pick up alert tours under various schedules and the interface of these schedules with the static leave and TDY periods. This demonstrates the fact that multiple measures must be used to appreciate the impact of a change of schedules. If the concern is limited to averages for different segments of the crew force, the view of which schedule yields the optimal number of ADD is distorted. The observer will notice, however, when viewing the averages for the total crew force, that the straight seven-day schedule yields the highest average which is a mathematical certainty since it also yielded the highest total of ADD. In terms of the STAN/EVAL average, the 4/3 A and 3/3/2 A schedules exceeded the seven-day average with 18 crews available. When 17 crews were available, the seven-day STAN/EVAL average was not exceeded. This same situation existed when only 16 crews were available for alert duty.



Viewing the line crew averages in the same order, when 18 crews were assuming alert the seven-day average was exceeded by no other schedule model. With the 17 crew wing, the seven day average was exceeded by the 3/3/2 A and the 3/6 B models. In the case of 16 crews available the seven-day average was exceeded by the 3/3/2 A and 3/3/2 B schedule models. It can be observed that no schedule exceeds the seven day alert schedule available duty day averages for both STAN/EVAL and line crews. Once again the seven-day alert system emerges as the optimum schedule when viewed from the perspective of distribution of available duty days. The only type of schedule that would be superior to the seven-day schedule in this regard would be one in which the average for STAN/EVAL crews and line crews both exceed those of the seven-day model. If this happened the total average would also be higher and consequently the total number of ADD would be greater. The reasoning for this is that presently, any schedule other than the straight seven-day alert tour would create limitations on the ability of either the STAN/EVAL crews or the line crews to fulfill their requirements. For example, with 18 crews available it was noted that the STAN/EVAL 4/3 A average exceeded the straight seven-day model STAN/EVAL average. Viewed in isolation the 4/3 A would allow STAN/EVAL a greater amount of time to accomplish evaluation activities. Simultaneously, however, this same schedule allows line crews less time to accomplish their recurring flying training as well as their ability to be scheduled for evaluations (see Table 3-1 to confirm this observation).

### Incidence of Splitting Crew Rest

Whenever possible, it is desired to give a crew CCRR at the completion of their alert tour. In the case of the seven-day alert tour this occurs after the seventh day of alert. In all other schedule variations, CCRR will normally be given after the final segment of the alert cycle is completed. To illustrate, CCRR will normally only be granted after the third three-day segment of the 3/3/3 basic alert model is completed. This is modified in the case of a crew going on leave or TDY. In such instances, the crew is given CCRR before their departure in accordance with the number of days of alert they have accumulated. Also, if a crew comes off leave and picks up the final segment of an alert cycle, CCRR will be given in conjunction with the other crews in that flight. This will synchronize their duties with their sister crews in the flight.

A true split of CCRR occurs when some future event, most likely leave, necessitates the granting of CCRR on two successive alert segments for a particular crew. When a wing has their full authorization of crews, 18 for a typical B-52G wing, no occasions arise where it is necessary to split crew rest. Indeed, there were no instances in any schedule model when 18 crews were available that CCRR had to be split. When only 17 or 16 crews were available, however, situations arose in which there was no other acceptable alternative. To gain an understanding of this development it is necessary to realize what the scheduler's priorities are as well as the type of situation which forces a splitting of CCRR.

Ideally, the scheduler attempts to maintain the alert requirements, allow enough time for all crews to meet their training and evaluation requirements, not split CCRR, not borrow other line crews from different flights to help another flight meet its alert commitments and not have any STAN/EVAL crew exceed 50% of the average line crew's total days on alert for the quarter. The final three items mentioned are listed in increasing priority. That is, the first guideline to fall will be splitting CCRR, the second to go will be flight integrity and the last to fall will be a STAN/EVAL crew exceeding 50% of a line crew's alert total for the quarter.

The kind of situation that forces a splitting of CCRR is the result of the interplay of the aforementioned priorities. The number of times CCRR had to be split, the crew involved, the reason, the schedule model, and number of crews available are listed in Table 3-4. Three illustrations will be provided to show the difference between a true split of CCRR and an apparent split as well as to show how a true split of CCRR occurs.

No true splits occurred with 18 crews available. To illustrate how leave will influence the timing of CCRR though, consider crew S-21 in the month of March under the 2/3/2 A schedule (see Appendix A, p. 83 ). From 3 March to 6 March it takes a full CCRR with the rest of its flight, but it goes on leave beginning 23 March. As a result it is given a CCRR of three days beginning 17 March after having

TABLE 3-4

## INCIDENCES OF SPLIT CCRR

<u>Model</u> <u>Designator</u>	<u>Crew</u>	<u>Month</u>	<u>Reason</u>
17-2/3/2 B	E-35	February	Due to leave
17-4/3 B	E-35	"	" " "
17-4/5 C	S-02	"	" " "
17-4/5 D	S-02	"	" " "
17-3/6 B	E-15	Feb-Mar	" " "
17-3/6 C	S-02	February	" " "
17-3/6 C	S-21	March	" " "
16-2/3/2 B	E-35	February	" " "
16-4/3 B	R-34	January	" " "
16-4/3 B	E-35	February	" " "
16-4/3 C	R-34	January	" " "
16-4/3 C	E-35	February	" " "
16-3/3/2 B	R-22	January	" " "
16-3/3/2 B	E-24	March	Due to TDY
16-3/3/3 A	S-21	"	Due to leave
16-3/3/3 B	R-22	January	" " "
16-3/3/3 B	E-13	February	" " "
16-3/3/3 B	S-21	March	" " "
16-3/3/3 C	E-13	February	" " "
16-4/5 A	E-15	Feb-Mar	" " "
16-4/5 B	S-21	March	" " "
16-4/5 C	S-21	"	" " "
16-3/6 B	E-15	Feb-Mar	" " "
16-3/6 C	E-15	Feb-Mar	" " "
16-3/6 C	S-21	March	" " "

completed the first two segments of its current alert cycle.

To illustrate the second type of apparent split, consider crew R-14 during the period 27 February to 1 March under the 2/3/2 A schedule (see Appendix A, p.8283) with 18 crews available. The crew returned from a TDY assignment earlier in the month and is rejoining its flight for the final segment of the current alert cycle. Because of this, it is given only one day of CCRR in order to synchronize it with the rest of its flight. It then picks up the beginning of the next alert cycle on 5 March with the rest of its flight.

For an example of why the true split of CCRR happens, reference crew S-21 in March under the 3/6 C schedule (see Appendix B, p. 210 ) with 17 crews available. Normally S-21 would receive five days of CCRR after the six day alert segment. On 23 March, though, the crew goes on leave. In this instance, the fifth day of CCRR conflicts with the first day of leave. To prevent this situation from materializing, S-21 is given two days CCRR on 4-5 March after the three-day alert segment, followed up by the remaining three days CCRR on 19-21 March after the six day alert segment.

It can be noticed that using the straight seven-day alert schedule, no splitting of CCRR occurred regardless of the number of crews available. This is yet another point in that schedule's favor. It can also be seen that the frequency at which CCRR had to be split increased greatly when the crew force decreased from 17 to 16. This is because a STAN/EVAL crew is lost when making this change in accordance

with current guidance. In order to avoid breaking the STAN/EVAL 50% rule, the line crews must pick up the increased alert load. A third point is that in nearly every case that CCRR had to be split because of leave, the same crew was affected at least twice in iterations of the same schedule model. For example, crew R-34 was affected by both the 16- 4/3 B and 16- 4/3 C schedules. Depending upon how leave interacted with the schedule iterations, a crew could be impacted at either the beginning or conclusion of the iterations. The example just cited shows impact at iterations B and C, however there was not impact in the 4/3 A. A contrasting example is crew S-21 which is affected by the 16- 3/3/3 A and 16- 3/3/3 B schedules, but not by the 16- 3/3/3 C schedule. A few instances occurred in which a crew was affected by only one iteration of a schedule model, such as crew E-15 being subject to a split CCRR in the 17- 3/6 B schedule, but not by the A or C versions of that schedule. The determination of how often a crew would be affected by iterations of the same basic schedule model was a function of how the crew's CCRR impacted with its leave period and whether another crew in its flight or from STAN/EVAL was available to pick up an alert segment.

#### Incidence of Violating Flight Integrity

The next highest priority for the scheduler is to try to maintain the alert commitment without having to borrow crews from other flights to fulfill one flight's alert duty. Adhering to this guideline posed no difficulty when

13 or 17 crews were available to work with, but when the wing strength decreased to 16 crews there were 21 occasions when borrowing one crew from another flight could not be avoided. The factors creating these situations were the interplay of crew loss caused by the decline from 17 to 16 crews, crew non-availability because of leave or TDY, and the necessity of not exceeding the STAN/EVAL 50% rule.

Violation of flight integrity occurs when a line crew from a flight not scheduled for alert, is put on alert with another flight. This is different from the placement of a STAN/EVAL crew on alert with a flight. STAN/EVAL crews are generally paired up with flights and are placed on alert to fulfill their own requirements. The scheduler attempts to link the accomplishment of STAN/EVAL alert duty to occasions when four crews from the same flight are not available to fulfill alert requirements. For example, if "C" Flight only has four crews and one crew is on leave, the scheduler will try to fulfill S-03's alert commitment while the crew from "C" Flight is on leave. With three flights and only two STAN/EVAL crews, the desired pairing of a STAN/EVAL crew with a particular flight breaks down most often in the 16 crew setting.

The incidences of violating flight integrity are listed in Table 3-5. To explain why this occurs, consider the situation of crew R-22 under the 16- 4/5 B schedule (see Appendix C, p. 261) in February. "C" Flight only has a

TABLE 3-5

## INCIDENCES OF VIOLATING FLIGHT INTEGRITY

<u>MODEL DESIGNATOR</u>	<u>CREW</u>	<u>MONTH</u>	<u>ALERT WITH xFLIGHT</u>	<u>REMARKS</u>
16 - 7	E-13	Mar	w/B Flight	
16 - 4/4	R-22	Feb	w/C Flight	
16 - 4/4	E-24	Feb	w/C Flight	
16 - 4/5 A	R-22	Feb	w/C Flight	1 Cycle
16 - 4/5 A	R-22	Feb	w/C Flight	
16 - 4/5 B	S-11	Jan	w/C Flight	
16 - 4/5 B	R-22	Feb	w/C Flight	1 Cycle
16 - 4/5 B	R-22	Feb	w/C Flight	
16 - 4/5 C	S-11	Jan	w/C Flight	
16 - 4/5 C	R-22	Feb	w/C Flight	1 Cycle
16 - 4/5 C	R-22	Feb	w/C Flight	
16 - 4/5 C	S-11	Jan	w/C Flight	
16 - 4/5 D	R-22	Feb	w/C Flight	1 Cycle
16 - 4/5 D	R-22	Feb	w/C Flight	
16 - 4/5 D	E-13	Mar	w/B Flight	
16 - 3/6 A	S-11	Jan	w/C Flight	
16 - 3/6 A	E-13	Mar	w/B Flight	
16 - 3/6 B	S-11	Jan	w/C Flight	
16 - 3/6 B	E-13	Mar	w/B Flight	
16 - 3/6 C	S-11	Jan	w/C Flight	
16 - 3/6 C	E-13	Mar	w/B Flight	



total of four crews and both times the flight is scheduled for alert, one crew is on leave. To put a STAN/EVAL crew on alert would preclude the use of the STAN/EVAL crew in March when flexibility is desired. As a result, R-22 is paired with "C" Flight for one complete alert cycle. Because "C" Flight has no leave periods in March and a STAN/EVAL crew picked up the alert when the first leave period began 26 January, this marked the only time during the quarter that another line crew had to go on alert with "C" Flight. It can also be seen that a pattern is apparent which holds in most instances. If a crew is paired up with another flight at some point in one model's iteration, it is most likely paired up with the same flight at nearly the same point in at least one other iteration of the same basic model. Consider crew E-13. It is paired up with "B" Flight in March under the 16- 3/6 A, B, and C schedules (see Appendix C, p.271,274,277). Also, there were four times in which a crew was paired with another flight for a complete alert cycle. This happened to crew R-22 in February under the 16- 4/5 A schedule as well as under the B, C, and D iterations of that basic schedule. Even the straight seven-day alert schedule had one instance of violating flight integrity when only 16 crews were available. The general observation to be made is that as crew resources diminish in the face of constant alert requirements, the probability of violating flight integrity increases.

### Incidence of STAN/EVAL Exceeding the 50% Rule

The scheduler, at all costs, attempts to prevent any STAN/EVAL crew from exceeding 50% of the average line crew's total days of alert for the quarter. Still, at times, the scheduler has no choice but to give a STAN/EVAL crew an alert tour. There were a total of 21 times that such a situation occurred. (Refer to Table 3-6 for a listing of the incidents and circumstances). To illustrate how such a condition can occur consider crew S-03 under schedule 16- 3/5 C (see Appendix C, p. 247). During the period 19-21 March "B" Flight assumes alert. Only three crews in the flight are available for duty because of a TDY assignment and impending leave for S-21. Both STAN/EVAL crews have already completed their quarterly alert requirements, yet they are the only crews with the capability to go on alert. The decision rule for this situation was to assign the alert to the STAN/EVAL crew having the lowest total days of alert for the quarter as of 19 March.

In order to appreciate the impact of a schedule model, it is necessary to view it from more than one perspective. For this study the decision criterion was the aggregate number of available duty days on a quarterly basis. Additional criteria were average number of available duty days for STAN/EVAL crews, average number of available duty days for line crews, overall average number of available duty days, the frequency of splitting CCRR, the frequency of violating flight integrity, and the frequency of any STAN/EVAL crew accumu-

TABLE 3-6

## INCIDENCES OF STAN/EVAL EXCEEDING 50% ALERT RATE

<u>Schedule</u>	<u>Crew(s)</u>
18 - 3/3/3 C	S-02
18 - 4/5 B	S-03
18 - 4/5 C	S-02,S-03
18 - 4/5 D	S-02,S-03
18 - 3/6 C	S-02,S-03
18 - 2/3/2 B	S-03
17 - 4/4	S-03
17 - 3/5 C	S-03
17 - 3/3/3 A	S-01
17 - 3/3/3 C	S-02
17 - 4/5 A	S-03
17 - 4/5 B	S-03
17 - 4/5 C	S-02,S-03
17 - 4/5 D	S-02,S-03
17 - 3/6 C	S-02
16 - 4/3 C	S-01
16 - 3/3/2 B	S-03
16 - 3/5 B	S-03
16 - 3/5 C	S-03
16 - 3/3/3 A	S-03
16 - 4/5 D	S-01

lating more than 50% of the average line crew's total days of alert. When considered under all of these criteria, the straight seven-day alert schedule emerges as the optimum schedule.

## CHAPTER 4

### CONCLUSIONS AND RECOMMENDATIONS

#### Evaluation of Hypotheses

In the evaluation of the original three research hypotheses, the data contained in Tables 3-1, 3-2, and 3-3, depict the final results of the 66 models generated during this research program. The first conclusion drawn by the authors is the rejection of research hypothesis number one; that through the use of variable alert tour lengths the average number of available duty days will be increased. In the three levels of sensitivity analysis, all eight variable alert tour length models described in Chapter 1 arrived at a lower number of available duty days than that generated by the straight seven-day model. This, therefore, leads directly to the acceptance of research hypothesis number two; that the current seven-day alert scheduling system allows the maximum number of available duty days in contrast to any of the variable alert tour length models. Finally, the authors have reached a conditional acceptance of research hypothesis number three; that variable alert tour scheduling will allow for greater flexibility to adapt to conditions which occur when the scheduling parameters are changed to reflect those typically encountered in a B-52 wing.

In order to test hypothesis number three a brief review of the sensitivity analysis must be given. First, the variable alert tour length models were developed using the standard maximum number of authorized crews (18). This structure included three STAN/EVAL crews and three flights each containing five crews. Second, the models were reconstructed using a realistic number of 17 available crews. This structure included three STAN/EVAL crews, two flights with five crews and the third flight having four crews. The crew eliminated was crew E-32 from "C" Flight. The models were reconstructed a third time by changing the number of crews to 16, which is the current SAC average assigned crews. This number was confirmed in telephone interviews with 8AF scheduling officers at Barksdale AFB, LA. This structure included two STAN/EVAL crews, two flights with five crews, and the third flight having four crews. The two crews eliminated were S-02 and E-32. Also, it was emphasized that when modeling this structure, the 50% STAN/EVAL alert rate be as closely adhered to as possible. This was to allow the two remaining STAN/EVAL crews to fulfill their wing level duties in the execution of scheduled and no-notice flight examinations of the remaining 14 line crews.

To accomplish the previously mentioned STAN/EVAL alert rate, certain changes to the basic assumptions of this research, as stated in Chapter 1 and in the Development of Charting Process steps found in Chapter 2, were required.

These changes are incorporated into the following Preliminary Recommendations setting.

#### Preliminary Recommendations

In this research effort, assumption H, is stated in Chapter 1, and step 6 of the Charting Process, as listed in Chapter 2, describe the successive rotation of the alert cycle among the flights. In this process, full Combat Crew Rest and Relaxation time off is given at the completion of the full variable alert tour length models. As an alternative, we recommend a modification to SAC Reg 55-44 to allow split CCRR time in between portions of the variable alert tour model. This recommendation allows full completion of CCRR without impacting projected duty. If not adopted, a crew could not be used in the completion of a portion of a variable alert tour model. The first example of this technique is found in the 18- 2/3/2 A model for crew R-22 in January (see Appendix A, p. 81 ). At the end of the second portion, 2/3, of the alert cycle, and after a total of five days of alert have been completed, three days of CCRR were given. This allowed the crew to complete its CCRR without impacting their leave cycle that starts on 19 January. Thus, the crew was available for alert duty for five days of the cycle. The crew would not have completed even this five day portion of the cycle if this modification was not adopted. A second example is illustrated in model 18- 2/3/2 B for crew S-31 in January (see Appendix A, p. 84 ). The crew was incorporated

into the cycle on 21 January, to complete the requirement for four alert crews that was fragmented when crew R-34 started its scheduled leave on 25 January. Crew S-31 was subsequently given only one day of CCRR since it completed only two days of alert. Again, this recommendation allows improved crew utilization that would otherwise negate the use of crew S-31. A final refinement of this technique is found in model 17- 3/6 C in March for crew S-21 (see Appendix B, p. 210). After completing the first three-day portion of the alert tour on 4 March, two days of CCRR were given. Then, after completing the second six-day portion of the alert tour on 19 March, the final three-days of CCRR were given. This was done because if the successive five days of CCRR commenced on 19 March, the final day of CCRR would have conflicted with the crew's first day of leave on 23 March. This split CCRR technique was required in many models when the number of available crews was reduced to 16 crews. This recommendation, therefore, is one technique that does allow greater flexibility in the scheduling process and directly supports research hypothesis number three.

Our second preliminary recommendation discusses assumption F in Chapter 1 which describes the flight integrity system and states that STAN/EVAL crews will supplement a flight during an alert tour if all four lines of alert cannot be maintained by that flight. This procedure implements STAN/EVAL alert participation and in most cases allows STAN/EVAL to maintain the 50% alert rate without severe disruption of



their duties. However, when the parameter of 16 available crews was imposed and the 50% STAN/EVAL alert rate was enforced, the flight integrity assumption had to be modified. The second recommendation is that a formal definition of the flight integrity system be incorporated into SAC Reg 55-44 and SAC Reg 60-9 stating that this system is the desired Standard Operating Procedure. However, modifications to its application are permissible in units possessing less than their full authorized crew strength. This recommendation was first instituted in the 16- 4/5 A model (see Appendix C, p. 258 ) when, on 5 February, crew R-22 from "B" Flight assumed alert with "C" Flight and continued the full 4/5 schedule until the conclusion of CCRR on 28 February. It then rotated back into the alert cycle with its own flight on 13 March. This technique was repeated with the same crew, R-22, in the same alert cycle in all 16- 4/5 models. Without this modification crew S-03 would have been forced to assume an additional nine days of alert and their alert participation rate would have been 80% for the quarter. This technique was also applied in the 16- 3/5 A, B, and C models using crews S-11 and E-13 to supplement "C" Flight and "B" Flight, respectively, during the quarter. This recommendation again enhances scheduling flexibility and reduces the STAN/EVAL alert participation rate.

The third preliminary recommendation concerns the "realistic" application of the STAN/EVAL 50% alert rate procedure. The governing SAC Regulation for this procedure

is 60-4, Vol I, which states that the 50% participation rate is the recommended level of utilization of all STAN/EVAL crews. This is in contrast to the former guidance previously issued by 1st Combat Evaluation Group (CEVG), which stated that the alert participation rate would be a maximum rate of 60% for S-01, and 70% for S-02 and S-03. Historically, under the former participation rate, a B-52 wing received a formal discrepancy report if, during its annual CEVG evaluation, it had exceeded these alert participation rates. After the modification to the recommended 50% alert rate, some units still applied the maximum ceilings to avoid the possibility of corrective actions being instituted after CEVG evaluations. In the present environment of severely reduced combat crew training, this alert participation must be selectively adjusted by each scheduling office to insure maximum crew availability. It is not the objective of this recommendation to force STAN/EVAL into excessive alert participation rates, since the execution of their duties is paramount in the successful operation of a B-52 wing. Whenever possible, particularly when only two STAN/EVAL crews are available, this should be the final criterion to be relaxed. However, it is our recommendation that a supplement to SAC Reg 60-4 be issued to reemphasize that the 50% alert rate is only a recommended level of utilization. Also, the importance of the total utilization of all combat ready crews must remain the primary objective in the management of operations by scheduling personnel. If the unit wishes to implement one

of the new variable alert tour models found in the following appendices, it must carefully compare the flexibility advantages that the new system will provide in contrast to the present advantages of maximum available duty days found in the seven-day alert system.

#### Optimality of Seven-Day Alert System

The current basic SAC alert scheduling system, using the seven-day length alert tour was validated in this research as being the most advantageous system, when examined for the generation of the maximum number of available duty days. One of the primary cause-and-effect relationships that support this conclusion is the historical acceptance of a seven-day cycle, known as a week, as the basic time measurement unit. Also, the two day period defined as a weekend by our society, consisting of Saturdays and Sundays as non-work days, or for the purposes of this research, as non-available duty days, further supports the conclusion of seven-day optimality. This becomes readily apparent when CCRR is examined in conjunction with the non-availability of Saturdays and Sundays for additional duty requirements. Since the time afforded for CCRR has already been defined as a non-available duty day, by consolidating it with the non-availability of weekend days, the realized time-off generated by CCRR is limited to two days. When SAC instituted its procedure of changing over its alert crews on Thursday, the Command, in effect, made CCRR a two day system for non-availability as opposed to four days. It is for this reason that any alert

system, which implements change-over on a day that does not overlap with a weekend, will inevitably fall short in the attainment of maximum available duty days. The most obvious example is a seven-day alert system that would change-over on Tuesday. Since four days of CCRR must be afforded with completion of alert duty on Tuesday, Tuesday through Friday would be non-available duty days as well as the immediately following Saturday and Sunday. Thus, in a cycle of alert from Tuesday through Tuesday with its accompanying CCRR and weekend non-availability, 13 days of non-availability are established. Under the present system of Thursday through Thursday, alert duty with its accompanying CCRR, only 11 days of non-availability are established. In every case, any system not using this overlap period will result in more non-available duty days. This, then, is the scheduling system that SAC chose when it first implemented its nuclear alert system, and it is the system that this research effort has subsequently validated as providing the maximum number of available duty days. However, if weekends were not defined as non-available, then the application of a new cyclical system would dramatically alter the results of this research process.

#### Applications of Non-Seven Day Systems

The choice of a seven-day cycle with its two days of non-availability on the weekends, is a conscious decision by the HQ SAC staff to minimize military disruptions within

the normal day-to-day and week-to-week operations found in contemporary American society. Viewing the complicated nature of military maintenance procedures, this two day weekend period allows for the correction of many minor maintenance discrepancies that have accumulated during the previous five days of operational flying sorties. In the authors' operational experiences, many instances of weekend duty by B-52 maintenance personnel can be cited. It is not the purpose of this section to debate the validity of the use of a seven-day cycle; but to point out several alternate systems that are in use in the military.

The first example is the normal operating procedure found in the Military Airlift Command (MAC). In discussions with many MAC flying and support personnel, it becomes readily apparent that MAC does not utilize a standard seven-day cycle, with its accompanying non-availability of weekends, in its normal operations. It is clearly recognized that MAC's mission is dramatically different than that of SAC's; however, certain specifications can be highlighted. When a MAC aircrew departs its home station on a normal two week airlift mission, it has a fixed schedule and timetable that it must adhere to. In order to accomplish all the scheduled sorties and completion dates on its itinerary, the MAC aircrew must disregard the non-availability of weekend days to complete its activities. If the aircrew is to reach a certain destination by a specific date, it proceeds to maximize the utilization of all available days to accomplish its mission. If these days encompass the

traditional weekend periods, then MAC's procedures dictate the use of these weekend periods to insure the successful completion of the mission. Thus, the completion of the mission is the aircrew's first priority and will be rigorously adhered to at all times barring major maintenance difficulties. Even when major maintenance malfunctions are encountered, maintenance personnel are expected and required to complete all corrective actions to insure mission completion regardless of weekend duty.

Even within the Strategic Air Command, the mandatory exclusion of weekend flight operations is often waived when mission accomplishments dictate the use of alternate procedures. The most notable example exists in conjunction with the support requirements of the SAC KC-135 reserve forces. The SAC KC-135 reserve aircrews are regularly required to fly operational training sorties on weekends. It is in the experience of the authors that, at least once every six months, operational B-52 sorties were generated in support of the KC-135 training requirements. These missions were conducted within normal operational training scenarios involving the air-refueling of B-52 aircraft by their sister KC-135 reserve aircrews. At the completion of the air-refueling portion of their mission, the B-52 crew would conduct further low level bombing training requirements at the nearest Strategic Training Range (STR) or return to their home base for pilot proficiency training. This weekend duty normally generated the requirement for three aircraft and aircrews to be utilized in the completion of the

Air Force Reserves training requirements. This is, as was previously mentioned, a unique requirement for weekend training of aircrews; but it is not a singular occurrence within SAC. Within two years of operational scheduling experience by one of the authors, at least six occurrences of this nature can be cited. This example is more dramatically amplified in the operational experiences of the second author in SAC missile operations procedures.

In the normal accomplishment of its nuclear deterrent role, SAC has established a similar continuous alert duty system for all Minuteman and Titan missile crews. This alert duty is maintained at all times by both Minuteman and Titan missile crews for a 24 hour period. When change-over of their crews occur, complete disregard is made of the availability of duty days by SAC missile schedulers. In fact, when further training requirements occur, such as the accomplishment of simulator periods by the missile crew, these periods will be scheduled on any day not encompassing strategic nuclear alert duty. Again, it must be emphasized, that the nature of the strategic missile deterrent mission is completely different than that of the SAC B-52 force. However, this is a complementary system currently within operational use at all SAC missile wings and demonstrates that the standard use of a seven-day cycle is not the only scheduling system used in the normal operating procedures by SAC. The missile crew scheduling system amplifies the conceptions of the authors that a seven-day alert system is not a mandatory

procedure in the accomplishment of SAC's strategic mission. This is further highlighted in the following scenario describing a recommended alternate alert procedure.

#### Recommendation of an Alternate Eight Day System

This recommendation is for an alternate alert system comprised of an eight day alert cycle split into two four-day segments. This system incorporates a significant change to SAC's normal operating procedures in that weekend days are not considered as non-available duty days in the calculation of Total ADD. A possible scenario, during which such a system might be implemented, follows.

A crisis situation has brought about a state of heightened international tension which has increased the state of military posture by both military superpowers. While SAC currently possesses a system whereby an increase in the number of lines of alert is made available to the Commander-in-Chief, this system suspends the normal operational training sorties which SAC operates under during day-to-day readiness conditions. Alternatively, the recommended split four alert system, which is illustrated in Figure 4-1 as the 18- 4/4 MCD, does not require suspension of operational training sorties. Three extremely important parameter changes are incorporated in this model. First, all leave periods and TDY's are suspended in the model. This is justified if the basic premise of an international crisis is accepted by the reader. Second, a 50% increase in the number of lines of alert from four to six, is realized. This is accomplished within the flight



FIGURE 4-1

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																															JANUARY					
																																			Alert		Available		Non	
																																			MO	QTR	MO	QTR	MO	QTR
18 - 4/4 MOD		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR		
S-01		A											A																					12	12	15	15	16	16	
S-02																																		11	11	16	16	15	15	
S-03		O																																8	8	15	15	16	16	
S-11																																		12	12	15	15	16	16	
R-12																																		12	12	15	15	16	16	
E-13																																		12	12	15	15	16	16	
R-14																																		12	12	15	15	16	16	
E-15																																		12	12	15	15	16	16	
S-21																																		11	11	16	16	15	15	
R-22																																		11	11	16	16	15	15	
R-23																																		11	11	16	16	15	15	
E-24																																		11	11	16	16	15	15	
E-25																																		11	11	16	16	15	15	
S-31																																		8	8	15	15	16	16	
E-32																																		8	8	15	15	16	16	
R-33																																		8	8	15	15	16	16	
R-34																																		8	8	15	15	16	16	
E-35																																		8	8	15	15	16	16	
TOTALS																																		186	186	276	276	282	282	

ONE TIME FORM

ONE TIME FORM

Modified 18 - 4/4

FIGURE 4-1

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend																												
		A - Alert O - CCRR L - Leave T - Temporary Duty																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
S-01		A						A																						
S-02																														
S-03																														
S-11																														
R-12																														
E-13																														
R-14																														
E-15																														
S-21																														
R-22																														
R-23																														
E-24																														
E-25																														
S-31																														
E-32																														
R-33																														
R-34																														
E-35																														
TOTALS																														

ONE TIME FORM

Modified 18 - 4/4

[illegible]

Modified 18 - 4/4

integrity system by linking each STAN/EVAL crew into the alert flow with a specific flight. In this system, S-01 is linked to "A" Flight, S-02 to "B" Flight, and S-03 to "C" Flight. It is automatically assumed that the STAN/EVAL alert participation rate has been discarded temporarily. Third, all days not on alert or CCRR are instantly elevated in status to available duty days. This allows for the generation of the additional training sorties during the quarter. All these changes are depicted in Figure 4-1.

This new modified schedule increases the number of available duty days to 828. This accounts for a 27% enhancement in the total number of days that could be used for operational sorties. However, a very careful detailed analysis must be made of all the implications that this possible increase in sorties would cause. Several of these implications would be in areas of maintenance personnel manning, security police requirements, medical complications resulting from the increased workloads, and overall morale. The analysis must explore these and numerous other factors before such a system could be considered. This is one area for follow on research efforts in the application of variable alert tour models within SAC.

#### Final Recommendations

As illustrated throughout this thesis and in the following three appendices, the alert scheduling process is one that is cyclical and repetitive in nature. Because of this pattern, it is felt that it would be possible to develop

a computer program to test and simulate each alert tour length model. A major recommendation, therefore, as a follow-on to this research effort, would be the development of such a program. This could be done using the computer language CCBCOL, since it is designed for the manipulation of graphic presentations and incorporates the logic statements necessary for the decision making steps of scheduling. The results of the successful completion of such a program would not only increase the number of models which could be tested, but also aid in the replication efforts of future researchers. Also, such a model could be modified to incorporate variations encountered in individual unit manning requirements, such as 15 or 14 mission ready crews. This recommendation could be implemented in conjunction with another follow-on research project involving survey techniques.

A second recommendation for further research is a proposal for a survey to examine the acceptability of variable alert tours at the unit level. As stated in the Scope of Chapter 1, this thesis was aimed exclusively at the quantitative aspects of the variable alert scheduling system. Copies of this thesis could be made available to all SAC mission development personnel. Then, after each scheduler has reviewed the results of this effort, a survey would be taken to evaluate the qualitative aspects of the system. These aspects would include: effects on morale of the aircrews, willingness of unit schedulers to implement a new variable alert tour system, and the applicability of this research to

the normal operating procedures at the wing level. This follow-on research would provide valuable insights for future decision makers at HQ SAC if a new system was implemented, especially if the new system included radical changes, such as the recommended 18- 4/4 MCD. With this information, a full scale staff study would have a foundation for the development of any scheduling system that a commander might choose to initiate.

Finally, it is the conclusion of the authors that the techniques presented in this thesis are justified and realistic in the determination of the scheduling process. In reality, based upon two years of operational experience in the scheduling of aircrews, these techniques are commonly used by wing level mission development personnel. With the current stabilization of 16 crews at most 3-52G wings, further sensitivity analysis using 15 and 14 crews is not needed. However, if further research indicated that even more extensive force reductions were projected, the techniques used in this research would be applicable, although additional modifications to the basic assumptions and steps would probably be necessary. As it was earlier stated, scheduling is cyclic and repetitive in nature, but SAC's mission development personnel must possess the greatest resources for adaptability and flexibility in the successful completion of their daily duties.

APPENDICES

APPENDIX A  
VARIABLE ALERT SCHEDULES  
UTILIZING 18 CREWS



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
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E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	O L																															
S-02																																
S-03																																
S-11	O																															
R-12																																
E-13	O																															
R-14	O																															
E-15																																
S-21	A																															
R-22	L-L																															
R-23	A																															
E-24	A																															
E-25	A																															
S-31	A																															
E-32	A																															
R-33	A																															
R-34	L																															
E-35	A																															
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH MARCH																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		O	L														L															
S-03																			A													
S-11																																
R-12																																
E-13		L																														
R-14																																
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R-22		O																														
R-23																																
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E-25		O																														
S-31		A																														
E-32		A																														
R-33		A																														
R-34		A																														
E-35		L	L																													
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02																																
S-03																																
S-11																																
R-12																																
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E-24																																
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E-35																																
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
			Alert Duty Days							Available Duty Days							Non- Available Duty Days																
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
18 - 2/3/2 A			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																															
S-02																																	
S-03																																	
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
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R-34																																	
E-35																																	
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VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																																						
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR
S-01		L			A							A									A		O										7	7	13	43	18	47		
S-02															L								A		O								2	7	9	44	22	46		
S-03																																	0	7	20	51	11	39		
S-11		O			A							A									A		O										9	23	8	31	23	59		
R-12		O			A							A									A		O										9	30	8	25	23	65		
E-13		L																															2	16	14	32	17	58		
R-14		O			A							A									A		O										9	18	11	37	20	53		
E-15		O																															0	21	8	25	23	65		
S-21		A		O																													7	26	6	32	25	58		
R-22		A		O																													11	21	11	34	20	56		
R-23																																	9	23	16	43	15	47		
E-24		A		O																													4	23	12	38	19	52		
E-25		A		O																													11	25	11	35	20	55		
S-31																																	9	21	9	31	22	59		
E-32		A		O																													11	23	7	22	24	68		
R-33		A		O																													4	23	16	33	15	57		
R-34		A		O																													11	23	7	22	24	68		
E-35		L	L																														9	23	10	22	21	68		
TOTALS																																	124	360	196	600	362	1020		

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH																																				
		JANUARY																																				
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	0	0	21	21	10	10
S-02	A-O																																1	1	19	19	12	12
S-03	A---													A---								A---	O---										7	7	12	12	19	19
S-11	L-----L																																5	5	16	16	15	15
R-12	O A---																	A---															12	12	11	11	20	20
E-13	O A---																	A---															12	12	11	11	20	20
R-14	O A---																	A---															7	7	14	14	17	17
E-15	O A---																	A---															12	12	11	11	20	20
S-21	O-----A---																	A---															9	9	11	11	20	20
R-22	O-----A---																	A---															5	5	4	4	27	27
R-23	O-----A---																	A---															9	9	11	11	20	20
E-24	O-----A---																	A---															9	9	11	11	20	20
E-25	L-----L																	A---															4	4	10	10	21	21
S-31	T-----T																	A---															4	4	11	11	20	20
E-32	L-----L																	A---															2	2	8	8	23	23
R-33	A-O-----A---																	A---															10	10	8	8	23	23
R-34	A-O-----A---																	A---															6	6	8	8	23	23
E-35	A-O-----A---																	A---															10	10	8	8	23	23
TOTALS																																	124	124	205	205	353	353



VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																															
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																	
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR								
	S-01	L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
	S-02												A																					
	S-03																																	
	S-11																																	
	R-12																																	
	E-13																																	
	R-14																																	
	E-15																																	
	S-21																																	
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	S-31																																	
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	R-33																																	
	R-34																																	
	E-35																																	
	TOTALS																																	

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
	A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non- Available Duty Days					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																	7	7	15	45	16	45					
S-02																																	2	8	8	40	23	50					
S-03																																	0	7	20	51	11	39					
S-11																																	10	23	10	38	21	52					
R-12																																	10	30	10	33	21	57					
E-13																																	2	18	15	35	16	55					
R-14																																	10	18	13	41	18	49					
E-15																																	1	21	7	30	24	60					
S-21																																	7	26	4	25	27	65					
R-22																																	11	21	8	28	23	62					
R-23																																	9	23	13	36	18	54					
E-24																																	4	23	11	32	20	58					
E-25																																	11	25	8	28	23	62					
S-31																																	9	23	9	28	22	62					
E-32																																	10	22	8	24	23	66					
R-33																																	3	23	17	33	14	57					
R-34																																	10	21	8	24	23	66					
E-35																																	8	21	11	25	20	65					
TOTALS																																	124	360	195	596	363	1024					

[illegible]

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02	A-O-----																															
S-03																																
S-11	L-----I																															
R-12	A-----																															
E-13	A-----																															
R-14	A-----																															
E-15	A-----																															
S-21	O-----																															
R-22	O-----																															
R-23	O-----																															
E-24	O-----																															
E-25	L-----																															
S-31	T-----																															
E-32	L-----																															
R-33	A-O-----																															
R-34	A-O-----																															
E-35	A-O-----																															
TOTALS																																

ONE-TIME FORM







VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
S-03																																
S-11		L	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
R-12																																
E-13																																
R-14																																
E-15																																
S-21		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
R-22																																
R-23																																
E-24																																
E-25		L	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS		124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124

ONE-TIME FORM







VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																														
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
S-01		L																																
S-02																																		
S-03																																		
S-11																																		
R-12																																		
E-13																																		
R-14																																		
E-15																																		
S-21																																		
R-22																																		
R-23																																		
E-24																																		
E-25																																		
S-31																																		
E-32																																		
R-33																																		
R-34																																		
E-35																																		
TOTALS																																		

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS																																

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02							A																									
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
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R-23																																
E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																																						
		Alert Duty Days																																						
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR					
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR		
S-01																																								
S-02																																								
S-03																																								
S-11																																								
R-12																																								
E-13																																								
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E-25																																								
S-31																																								
E-32																																								
R-33																																								
R-34																																								
E-35																																								
TOTALS																																								

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																															
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																	
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01	A-O-----	A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
S-02																																	
S-03																																	
S-11	L-----L	L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
R-12	O-A-----	O	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
E-13	O-A-----	O	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
R-14	O-A-----	O	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
E-15	O-A-----	O	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
S-21	O-----A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
R-22	O-----O	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
R-23	O-----A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
E-24	O-----A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
E-25	L-----L	L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
S-31																																	
E-32																																	
R-33	A-O-----	A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
R-34	A-O-----	A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
E-35	A-O-----	A	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTALS																																	

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																												
				Alert Duty Days				Available Duty Days				Non Available Duty Days																				
18 - 3/3/2 R																																
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS		112	236	198	407	306	655																									

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH											
																																MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																	6	7	17	45	14	45					
S-02	L																																3	8	10	44	21	46					
S-03																																	0	8	20	53	11	37					
S-11	A																																10	22	11	38	20	52					
R-12	A																																4	24	16	38	15	52					
E-13	L																																6	22	11	30	20	60					
R-14	A																																10	22	11	37	20	53					
E-15	A																																4	24	5	27	26	63					
S-21																																	8	27	5	25	26	65					
R-22	A																																11	17	11	32	20	58					
R-23	A																																8	24	15	37	16	53					
E-24	A																																3	22	13	33	18	57					
E-25	A																																11	22	11	35	20	55					
S-31																																	10	23	14	36	17	54					
E-32																																	10	21	14	31	17	59					
R-33																																	5	25	17	36	14	54					
R-34																																	10	22	14	29	17	61					
E-35	L																																5	20	18	34	13	56					
TOTALS																																	124	360	233	640	325	980					

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH MARCH																														
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																		
S-02																																		
S-03																																		
S-11																																		
R-12																																		
E-13																																		
R-14																																		
E-15																																		
S-21																																		
R-22																																		
R-23																																		
E-24																																		
E-25																																		
S-31																																		
E-32																																		
R-33																																		
R-34																																		
E-35																																		
TOTALS																																		

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH					
																																JANUARY					
																																Alert Duty Days	Available Duty Days	Non- Available Duty Days			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR
S-01																																0	0	21	21	10	10
S-02								A												A												8	8	12	12	19	19
S-03	A	O																														1	1	19	19	12	12
S-11	L																															3	3	16	16	15	15
R-12	A																															11	11	11	11	20	20
E-13	A																															11	11	11	11	20	20
R-14	A																															8	8	14	14	17	17
E-15	A																															11	11	11	11	20	20
S-21																																11	11	10	10	21	21
R-22	A																															3	3	6	6	25	25
R-23	A																															11	11	10	10	21	21
E-24	A																															11	11	10	10	21	21
E-25	L																															8	8	6	6	25	25
S-31																																5	5	10	10	21	21
E-32	L																															0	0	10	10	21	21
R-33	A	O																														9	9	10	10	21	21
R-34	A	O																														4	4	11	11	20	20
E-35	A	O																														9	9	10	10	21	21
TOTALS																																124	124	208	208	350	350



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend A - Alert O - CCRR L - Leave T - Temporary Duty		MONTH FEBRUARY																												
				Alert Duty Days							Available Duty Days							Non Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
E-32																																
R-33																																
R-34																																
E-35																																
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																		
				JANUARY																																		
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	0	0	21	21	10	10
S-02																																	8	8	13	13	18	18
S-03																																	2	2	18	18	13	13
S-11																																	3	3	16	16	15	15
R-12																																	11	11	10	10	21	21
E-13																																	11	11	10	10	21	21
R-14																																	8	8	13	13	18	18
E-15																																	11	11	10	10	21	21
S-21																																	10	10	12	12	19	19
R-22																																	3	3	7	7	24	24
R-23																																	10	10	12	12	19	19
E-24																																	10	10	12	12	19	19
E-25																																	7	7	8	8	23	23
S-31																																	5	5	10	10	21	21
E-32																																	0	0	10	10	21	21
R-33																																	10	10	10	10	21	21
R-34																																	5	5	10	10	21	21
E-35																																	10	10	10	10	21	21
TOTALS																																	124	124	212	212	346	346

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																															
		Alert Duty Days				Available Duty Days				Non- Available Duty Days																							
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																				
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01	I																																
S-02																																	
S-03																																	
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
S-21	A																																
R-22	L																																
R-23	A																																
E-24	A																																
E-25	A																																
S-31	A																																
E-32	A																																
R-33	A																																
R-34	L																																
E-35	A																																
TOTALS																																	





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	O-L																															
S-02	A																															
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21	A																															
R-22	L-L																															
R-23																																
E-24	A																															
E-25	A																															
S-31	A																															
E-32	A																															
R-33	A																															
R-34	L																															
E-35	O																															
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH							
																																	MARCH							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR
	S-01																																		0	9	22	43	9	47
	S-02																																	0	9	11	39	20	51	
	S-03																																	7	9	12	51	19	39	
	S-11																																	9	21	13	39	19	51	
	R-12																																	9	30	12	33	19	57	
	E-13																																	6	24	10	29	21	61	
	R-14																																	9	21	12	36	19	54	
	E-15																																	3	24	7	28	24	62	
	S-21																																	0	18	15	33	16	57	
	R-22																																	10	18	12	33	19	57	
	R-23																																	10	21	12	39	19	51	
	E-24																																	3	21	15	33	16	57	
	E-25																																	10	24	12	31	19	59	
	S-31																																	12	21	8	33	23	57	
	E-32																																	12	24	8	23	23	67	
	R-33																																	9	27	10	29	21	61	
	R-34																																	12	24	8	22	23	68	
	E-35																																	3	15	19	35	12	55	
	TOTALS																																	124	360	217	609	341	101	

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																														
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																	
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
S-01																																		
S-02		A	O																															
S-03																																		
S-11		L																																
R-12																																		
E-13																																		
R-14																																		
E-15																																		
S-21		O																																
R-22		O																																
R-23		O																																
E-24		O																																
E-25		L																																
S-31																																		
E-32																																		
R-33		A	O																															
R-34		A	O																															
E-35		A	O																															
TOTALS																																		





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days			Available Duty Days			Non-Available Duty Days																								
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		A	O																													
S-03																																
S-11		L																														
R-12		O	A																													
E-13		O	A																													
R-14		O	A																													
E-15		O	A																													
S-21		O																														
R-22		O																														
R-23		O																														
E-24		O																														
E-25		L																														
S-31																																
E-32																																
R-33		A																														
R-34		A																														
E-35		A																														
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
	A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																	3	9	17	41	14	49					
S-02	L															L																	0	11	11	35	20	55					
S-03																			A														3	9	17	52	14	38					
S-11																																	9	21	12	39	19	51					
R-12																																	9	30	12	31	19	52					
E-13																																	3	18	13	32	18	58					
R-14																																	9	24	12	31	19	59					
E-15																																	3	24	7	26	24	64					
S-21	A																																6	24	9	26	22	64					
R-22	A																																12	15	10	34	21	56					
R-23	A																																12	21	10	39	21	51					
E-24																																	3	21	16	33	15	57					
E-25	A																																12	24	10	28	21	62					
S-31	O																																10	22	11	35	20	55					
E-32	O																																10	22	11	29	20	61					
R-33	O																																9	29	12	32	19	58					
R-34																																	10	21	12	26	19	64					
E-35	L																																1	15	20	35	11	55					
TOTALS																																	124	360	222	604	336	1016					

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH JANUARY											
	A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non Available Duty Days					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																		0	0	21	21	10	10				
S-02	O																																0	0	19	19	12	12					
S-03																																	9	9	13	13	18	18					
S-11	L																																4	4	16	16	15	15					
R-12	A																																13	13	9	9	22	22					
E-13	A																																13	13	9	9	22	22					
R-14	A																																9	9	12	12	19	19					
E-15	A																																13	13	9	9	22	22					
S-21																																	9	9	10	10	21	21					
R-22																																	4	4	6	6	25	25					
R-23																																	9	9	10	10	21	21					
E-24																																	9	9	10	10	21	21					
E-25	L																																5	5	9	9	22	22					
S-31																																	5	5	10	10	21	21					
E-32																																	0	0	10	10	21	21					
R-33	O																																9	9	11	11	20	20					
R-34	O																																4	4	10	10	21	21					
E-35	O																																9	9	11	11	20	20					
TOTAL																																	124	124	205	205	353	353					

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02	A																															
S-03	O																															
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21	A																															
R-22	L-L																															
R-23																																
E-24	A																															
E-25	A																															
S-31																																
E-32																																
R-33	O																															
R-34	L																															
E-35	O																															
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01								A						O																		
S-02		L															L															
S-03																																
S-11								A						O																		
R-12								A						O																		
E-13		L								L																						
R-14								A						O																		
E-15		O															L															
S-21		A												A				O														
R-22		A												A																		
R-23		A												A																		
E-24																																
E-25		A												A																		
S-31																																
E-32																																
R-33																																
R-34																																
E-35		L-I																														
TOTALS																																

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02	A																															
S-03	O																															
S-11	A																															
R-12	A																															
E-13	A																															
R-14	A																															
E-15	A																															
S-21	A																															
R-22	L																															
R-23																																
E-24	A																															
E-25	A																															
S-31	A																															
E-32																																
R-33	O																															
R-34	L																															
E-35	O																															
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																																			
				Alert Duty Days			Available Duty Days			Non- Available Duty Days																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
																																		0	0	21	21	10	10
S-01																																		2	2	17	17	14	14
S-02																																		9	9	13	13	18	18
S-03																																							
S-11																																		2	2	18	18	13	13
R-12																																		11	11	11	11	20	20
E-13																																		11	11	11	11	20	20
R-14																																		9	9	12	12	19	19
E-15																																		11	11	11	11	20	20
S-21																																		9	9	9	9	22	22
R-22																																		4	4	6	6	25	25
R-23																																		9	9	9	9	22	22
E-24																																		9	9	9	9	22	22
E-25																																		5	5	8	8	23	23
S-31																																		5	5	11	11	20	20
E-32																																		0	0	10	10	21	21
R-33																																		11	11	9	9	22	22
R-34																																		6	6	7	7	24	24
E-35																																		11	11	9	9	22	22
TOTALS																																		124	124	201	201	357	357

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																												
				Alert Duty Days				Available Duty Days				Non- Available Duty Days																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		A			O																											
S-03													A														A					
S-11		L																														
R-12																																
E-13																																
R-14																																
E-15																																
S-21		O																														
R-22		O																														
R-23		O																														
E-24		O																														
E-25		L																														
S-31																																
E-32																																
R-33		A			O																											
R-34		A			O																											
E-35		A			O																											
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-02				A																												
S-03		O																														
S-11		A																														
R-12		A																														
E-13		A																														
R-14																																
E-15		A																														
S-21																																
R-22		L	L																													
R-23																																
E-24																																
E-25																																
S-31		O																														
E-32																																
R-33		O																														
R-34		L																														
E-35		O																														
TOTALS																																

ONE TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH											
																																	MARCH											
																																	Alert Duty Days				Available Duty Days				Non- Available Duty Days			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01		A										A																						7	9	13	42	18	48					
S-02		L																																0	12	11	35	20	55					
S-03																																		5	14	14	42	17	48					
S-11		A										A																						11	22	11	40	20	50					
R-12												A																						9	27	14	37	17	53					
E-13		L																																4	22	14	32	17	58					
R-14		A										A																						11	22	11	36	20	54					
E-15		A																																2	22	8	30	23	60					
S-21																																												
R-22		A																																4	22	11	29	20	61					
R-23		A																																11	15	8	32	23	58					
E-24		A																																11	20	8	37	23	53					
E-25		A																																2	20	15	33	16	57					
S-31		O																																11	25	8	24	23	66					
E-32		O																																9	23	12	33	19	57					
R-33		O																																9	18	12	33	19	57					
R-34		O																																9	30	12	27	19	63					
E-35		L-I																																9	21	14	28	17	62					
TOTALS																																		124	360	217	600	341	1020					





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01					A																											6	9	15	42	16	48						
S-02		L													L																	0	9	11	42	20	48						
S-03																																0	9	20	50	11	40						
S-11					A																											9	21	12	38	19	52						
R-12																																3	21	19	42	12	48						
E-13		L																														3	21	13	31	18	59						
R-14					A																											9	21	12	36	19	54						
E-15					A																											6	27	4	24	27	66						
S-21		A																														7	27	7	30	24	60						
R-22		A																														10	15	12	36	19	54						
R-23		A																														10	21	12	42	19	48						
E-24																																3	21	15	39	16	51						
E-25		A																														10	27	12	31	19	59						
S-31		A																														12	27	8	26	23	64						
E-32		A																														12	21	8	27	23	63						
R-33		A																														9	27	10	28	21	62						
R-34		A																														12	21	8	26	23	64						
E-35		L-L																														3	15	19	34	12	56						
TOTALS																																124	360	217	624	341	996						

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																												MONTH FEBRUARY											
	A -- Alert O -- CCRR L -- Leave T -- Temporary Duty																												Alert Duty Days			Available Duty Days			Non- Available Duty Days					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR			
S-01	L																																3	3	6	27	22	32		
S-02	A																																9	10	11	29	17	30		
S-03	O																																0	9	18	31	10	28		
S-11																																	9	12	10	27	18	32		
R-12																																	6	18	13	23	15	36		
E-13																																	6	18	8	18	20	41		
R-14																																	3	12	11	23	17	36		
E-15																																	9	21	10	20	18	39		
S-21	A																																10	19	11	22	17	37		
R-22	L																																1	4	18	24	10	35		
R-23																																	1	10	19	30	9	29		
E-24	A																																9	18	11	22	17	37		
E-25	A																																10	16	11	20	17	39		
S-31																																	9	15	9	19	19	40		
E-32																																	9	9	9	19	19	40		
R-33	O																																9	19	8	18	20	41		
R-34	L																																6	10	6	16	22	43		
E-35	O																																3	13	6	16	22	43		
TOTALS																																	112	236	195	404	309	658		

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
			Alert Duty Days			Available Duty Days			Non-Available Duty Days			Alert Duty Days			Available Duty Days			Non-Available Duty Days															
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		A																															
S-02		A																															
S-03		A																															
S-11		L																															
R-12		A																															
E-13		A																															
R-14		A																															
E-15		A																															
S-21		O																															
R-22		O																															
R-23		O																															
E-24		O																															
E-25		L																															
S-31																																	
E-32																																	
R-33		A																															
R-34		A																															
E-35		A																															
TOTALS																																	

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend A - Alert O - CCRR L - Leave T - Temporary Duty		MONTH FEBRUARY																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-02		A																														
S-03		O																														
S-11		A																														
R-12		A																														
E-13		A																														
R-14		A																														
E-15		A																														
S-21		A																														
R-22		L																														
R-23		A																														
E-24		A																														
E-25		A																														
S-31		O																														
E-32		A																														
R-33		O																														
R-34		L																														
E-35		O																														
TOTALS																																

ONE-TIME FORM



APPENDIX B  
VARIABLE ALERT SCHEDULES  
UTILIZING 17 CREWS

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		O																														
S-03																																
S-11		L																														
R-12		A																														
E-13		A																														
R-14		A																														
E-15		A																														
S-21																																
R-22																																
R-23																																
E-24																																
E-25		L																														
S-31																																
R-33		O																														
R-34		O																														
E-35		O																														
TOTALS																																

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR		
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR		
S-01																																	0	7	22	45	9	45					
S-02																																	0	7	11	43	20	47					
S-03																																	4	7	15	53	16	37					
S-11																																	13	27	11	36	20	54					
R-12																																	13	27	11	39	20	51					
E-13																																	6	27	12	28	19	62					
R-14																																	13	20	11	40	20	50					
E-15																																	7	28	4	25	27	65					
S-21																																	7	28	8	27	23	63					
R-22																																	7	21	15	30	16	60					
R-23																																	7	21	15	41	16	49					
E-24																																	0	21	17	36	14	54					
E-25																																	7	21	15	34	16	56					
S-31																																	11	28	10	29	21	61					
R-33																																	11	28	10	33	21	57					
R-34																																	11	21	10	29	21	61					
E-35																																	7	21	14	30	17	60					
TOTALS																																	124	360	211	598	316	932					

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																																					
		Alert Duty Days			Available Duty Days			Non-Available Duty Days																															
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR		
S-01																																		0	0	21	21	10	10
S-02																																		2	2	18	18	13	13
S-03																																		5	5	15	15	16	16
S-11																																							
R-12																																		5	5	14	14	17	17
E-13																																		12	12	8	8	23	23
R-14																																		12	12	8	8	23	23
E-15																																		7	7	13	13	18	18
S-21																																		12	12	8	8	23	23
R-22																																		10	10	14	14	17	17
R-23																																		5	5	6	6	25	25
E-24																																		10	10	14	14	17	17
E-25																																		10	10	14	14	17	17
S-31																																		4	4	11	11	20	20
R-33																																		9	9	9	9	22	22
R-34																																		7	7	6	6	25	25
E-35																																		9	9	9	9	22	22
TOTALS																																		124	124	203	203	324	324



VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																															
S-02		A																															
S-03																																	
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
S-21		A																															
R-22		L																															
R-23		A																															
E-24		A																															
E-25		A																															
S-31		A																															
R-33		A																															
R-34		L																															
E-35		A																															
TOTALS																																	

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH											
		A - Alert O - CCRR - Leave - Temporary Duty																															MARCH											
																																	Alert Duty Days				Available Duty Days				Non-Available Duty Days			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01		A																																7	7	13	43	18	47					
S-02		L																																0	7	11	41	20	49					
S-03		O																																0	10	20	49	11	41					
S-11		O																																9	23	8	31	23	59					
R-12		O																															9	30	8	25	23	65						
E-13		L																															4	20	13	30	18	60						
R-14		O																															9	21	8	31	23	59						
E-15		O																															2	23	6	23	25	67						
S-21		A																															7	26	6	32	25	58						
R-22		A																															11	21	11	34	20	56						
R-23		A																															9	23	16	43	15	47						
E-24		A																															4	23	12	38	19	52						
E-25		A																															11	25	11	35	20	55						
S-31		A																															11	25	7	26	24	64						
R-33		A																															11	30	7	24	24	66						
R-34		A																															11	23	7	22	24	68						
E-35		L																															9	23	10	22	21	68						
TOTALS																																	124	360	174	552	353	978						





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH											
																																MARCH											
																																Alert Duty Days				Available Duty Days				Non-Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31												
S-01																																7	7	13	43	18	47						
S-02																																0	8	11	41	20	49						
S-03																																0	12	19	45	12	45						
S-11																																10	23	10	38	21	52						
R-12																																10	30	10	33	21	57						
E-13																																4	20	14	34	17	56						
R-14																																10	21	10	36	21	54						
E-15																																3	23	5	28	26	62						
S-21																																7	26	4	26	27	64						
R-22																																11	21	8	29	23	61						
R-23																																9	23	13	37	18	53						
E-24																																4	23	11	33	20	57						
E-25																																11	25	8	28	23	62						
S-31																																10	24	8	27	23	63						
R-33																																10	30	8	24	23	66						
R-34																																10	21	8	24	23	66						
E-35																																8	23	11	22	20	68						
TOTALS																																124	360	171	548	356	982						

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	O																															
S-02																																
S-03																																
S-11	L																															
R-12	A																															
E-13	A																															
R-14	A																															
E-15	A																															
S-21	O																															
R-22	O																															
R-23	O																															
E-24	O																															
E-25	L																															
S-31	T																															
R-33	O																															
R-34	O																															
E-35	O																															
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																		
				FEBRUARY																																		
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	L																																4	4	7	27	21	32
S-02	A																																5	7	13	33	15	26
S-03																																	0	7	19	33	9	26
S-11																																	10	14	8	25	20	34
R-12																																	10	21	8	21	20	38
E-13																																	7	18	6	19	22	40
R-14																																	3	10	10	25	18	34
E-15																																	10	21	8	21	20	38
S-21																																	9	20	10	18	18	41
R-22																																	6	10	14	20	14	39
R-23																																	3	14	14	22	14	37
E-24																																	9	20	10	18	18	41
E-25																																	9	16	10	17	18	42
S-31																																	9	11	11	26	17	33
R-33																																	9	18	11	23	17	36
R-34																																	4	11	11	19	17	40
E-35																																	5	14	4	16	24	43
TOTALS																																	112	236	174	381	302	620

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																			
				MARCH																																			
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																					
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01		A				O																												3	7	17	44	14	46
S-02		L															L																	0	7	11	44	20	46
S-03																					A				O									3	10	17	50	14	40
S-11		O				A																												11	25	12	37	19	53
R-12		O				A																												11	32	12	33	19	57
E-13		L																																7	25	10	29	21	61
R-14						A																												11	21	13	38	18	52
E-15		O				A																												4	25	6	27	25	63
S-21		A	O																															5	25	6	24	25	66
R-22		A	O																															10	20	7	27	24	63
R-23																																		9	23	11	33	20	57
E-24		A	O																															3	23	11	29	20	61
E-25		A	O																															10	26	7	24	24	66
S-31		A				O																												10	21	10	36	21	54
R-33		A				O																												10	28	10	33	21	57
R-34		A				O																												10	21	10	29	21	61
E-35		L	L																															7	21	14	30	17	60
TOTALS																																		124	360	184	567	343	963



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend	MONTH JANUARY																														
			Alert Duty Days			Available Duty Days			Non-Available Duty Days																								
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01	A-O																																
S-02																																	
S-03																																	
S-11	L																																
R-12	A																																
E-13	A																																
R-14	A																																
E-15	A																																
S-21	O																																
R-22	O																																
R-23	O																																
E-24	O																																
E-25	L																																
S-31	T																																
R-33	A-O																																
R-34	A-O																																
E-35	A-O																																
TOTALS																																	

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH																																				
		FEBRUARY																																				
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	L																																					
S-02	A																																					
S-03																																						
S-11																																						
R-12																																						
E-13																																						
R-14																																						
E-15																																						
S-21																																						
R-22	L-I																																					
R-23																																						
E-24																																						
E-25																																						
S-31																																						
R-33																																						
R-34																																						
E-35																																						
TOTALS																																						

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																	
				JANUARY																																	
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR
S-01	A	O																														2	2	18	18	13	13
S-02																																0	0	21	21	10	10
S-03																																7	7	13	13	18	18
S-11	L																															4	4	17	17	14	14
R-12																																11	11	12	12	19	19
E-13																																11	11	12	12	19	19
R-14																																7	7	14	14	17	17
E-15																																11	11	12	12	19	19
S-21	O																															11	11	9	9	22	22
R-22																																4	4	6	6	25	25
R-23																																11	11	9	9	22	22
E-24																																11	11	9	9	22	22
E-25	L																															7	7	7	7	24	24
S-31																																3	3	13	13	18	18
R-33																																9	9	10	10	21	21
R-34																																6	6	8	8	23	23
E-35																																9	9	10	10	21	21
TOTALS																																124	124	200	200	327	327







VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																												MONTH										
																													FEBRUARY										
																													Alert Duty Days	Available Duty Days	Non- Available Duty Days								
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR		
S-01	I																																	3	3	7	28	21	31
S-02	A																																	8	8	11	31	17	28
S-03																																		0	8	19	32	9	27
S-11																																		8	12	10	26	18	33
R-12																																		8	20	10	21	18	38
E-13																																		4	16	8	19	20	40
R-14																																		4	12	11	25	17	34
E-15																																		8	20	10	21	18	38
S-21	A																																	9	20	11	21	17	38
R-22	L																																	4	8	15	21	13	38
R-23	A																																	5	16	14	24	14	35
E-24	A																																	9	20	11	21	17	38
E-25	A																																	9	16	11	19	17	40
S-31	A																																	11	15	9	21	19	38
R-33	A																																	11	19	9	21	19	38
R-34	L																																	7	11	8	19	20	40
E-35	A																																	4	12	5	17	23	42
TOTALS																																		112	236	179	387	297	616



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	A																															
S-02	L																															
S-03																																
S-11	A																															
R-12	A																															
E-13	L																															
R-14	A																															
E-15	A																															
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31	A																															
R-33	A																															
R-34	A																															
E-35	L-L																															
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02	A																															
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22	L-L																															
R-23																																
E-24																																
E-25																																
S-31	A																															
R-33	A																															
R-34	L																															
E-35	A																															
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH						
																																MARCH						
																																Alert Duty Days	Available Duty Days	Non- Available Duty Days				
17 - 3/3/2 A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	5	8	16	43	15	47
S-02																																	0	8	11	42	20	48
S-03																																	0	8	20	52	11	38
S-11																																	9	22	13	39	18	51
R-12																																	9	30	13	34	18	56
E-13																																	6	22	12	32	19	58
R-14																																	9	22	13	37	18	53
E-15																																	3	24	6	27	25	63
S-21																																	8	27	4	26	27	64
R-22																																	11	20	10	31	21	59
R-23																																	6	22	17	40	14	50
E-24																																	8	27	8	30	23	60
E-25																																	11	24	10	32	21	58
S-31																																	11	24	13	36	18	54
R-33																																	11	30	13	33	18	57
R-34																																	11	22	13	29	18	61
E-35																																	6	20	18	34	13	56
TOTALS																																	124	360	210	597	317	933

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																												MONTH FEBRUARY														
	A - Alert O - CCRR L - Leave T - Temporary Duty																																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR
S-01	L																																3	3	6	27	22	32					
S-02	A									A							A																8	9	10	29	18	30					
S-03																																	0	8	19	33	9	26					
S-11																																	9	12	11	27	17	32					
R-12																																	9	20	11	22	17	37					
E-13																																	5	16	8	19	20	40					
R-14																																	4	12	12	26	16	33					
E-15																																	9	20	11	22	17	37					
S-21																																	8	19	12	20	16	39					
R-22																																	3	6	16	21	12	38					
R-23																																	5	16	14	22	14	37					
E-24																																	8	19	12	20	16	39					
E-25																																	8	16	12	18	16	41					
S-31																																	11	13	7	22	21	37					
R-33																																	11	20	7	19	21	40					
R-34																																	5	12	7	15	21	44					
E-35																																	6	15	4	16	24	43					
TOTALS																																	112	236	179	378	297	625					

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH MARCH											
		A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days				Available Duty Days				Non-Available Duty Days			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																		5	8	17	44	14	46					
S-02																																	0	9	11	40	20	50						
S-03																																	0	8	20	53	11	37						
S-11																																	10	22	11	38	20	52						
R-12																																	10	30	11	33	20	57						
E-13																																	6	22	11	30	20	60						
R-14																																	10	22	11	37	20	53						
E-15																																	4	24	5	27	26	63						
S-21																																	8	27	5	25	26	65						
R-22																																	11	17	11	32	20	58						
R-23																																	8	24	15	37	16	53						
E-24																																	6	25	12	32	19	58						
E-25																																	11	27	11	29	20	61						
S-31																																	10	23	14	36	17	54						
R-33																																	10	30	14	33	17	57						
R-34																																	10	22	14	29	17	61						
E-35																																	5	20	18	34	13	56						
TOTALS																																	124	360	211	589	316	941						

ONE TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																															
			Alert Duty Days			Available Duty Days			Non-Available Duty Days																									
			MO	QTR	DAYS	MO	QTR	DAYS	MO	QTR	DAYS																							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01																																		
S-02																																		
S-03			O																															
S-11			L																															
R-12			A																															
E-13			A																															
R-14			A																															
E-15			A																															
S-21																																		
R-22																																		
R-23																																		
E-24																																		
E-25			L																															
S-31																																		
R-33			O																															
R-34			O																															
E-35			O																															
TOTALS																																		

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02																																
S-03	A																															
S-11	A																															
R-12	A																															
E-13	A																															
R-14																																
E-15	A																															
S-21																																
R-22	L+L																															
R-23																																
E-24																																
E-25																																
S-31	A																															
R-33	A																															
R-34	L																															
E-35	A																															
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH					
																																MARCH					
																																Alert Duty Days		Available Duty Days		Non- Available Duty Days	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR
S-01	L								A																							5	8	15	42	16	48
S-02																																0	8	11	41	20	49
S-03																																0	8	20	53	11	37
S-11	A																															11	24	9	34	22	56
R-12	A																															11	32	9	30	22	60
E-13	L																															8	24	8	28	23	62
R-14	A																															11	24	9	34	22	56
E-15	A																															3	24	6	27	25	63
S-21																																8	27	4	26	27	64
R-22																																12	18	10	34	21	56
R-23																																7	23	17	40	14	50
E-24																																9	28	8	30	23	60
E-25																																12	28	10	28	21	62
S-31																																8	24	14	34	17	56
R-33																																8	27	14	34	17	56
R-34																																8	19	14	31	17	59
E-35	L+L																															3	14	20	37	11	53
TOTALS																																124	360	198	583	329	947





VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH MARCH											
		A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non- Available Duty Days					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01		L							A																								5	8	15	42	16	48						
S-02																L																0	8	11	42	20	48							
S-03																																	0	9	20	52	11	38						
S-11		A																															12	24	9	35	22	55						
R-12		A																														12	32	9	30	22	60							
E-13		L																														8	24	8	26	23	64							
R-14		A																														12	24	9	35	22	55							
E-15		A																														4	24	6	27	25	63							
S-21																																	8	27	5	26	26	64						
R-22																																	11	17	10	32	21	58						
R-23																																	6	22	17	40	14	50						
E-24																																	8	27	8	29	23	61						
E-25																																	11	27	10	27	21	63						
S-31																																												
R-33																																	8	24	14	34	17	56						
R-34																																	8	28	14	34	17	56						
E-35																																	8	20	14	31	17	59						
TOTALS																																	3	15	20	36	11	54						
																																	124	360	199	578	328	952						



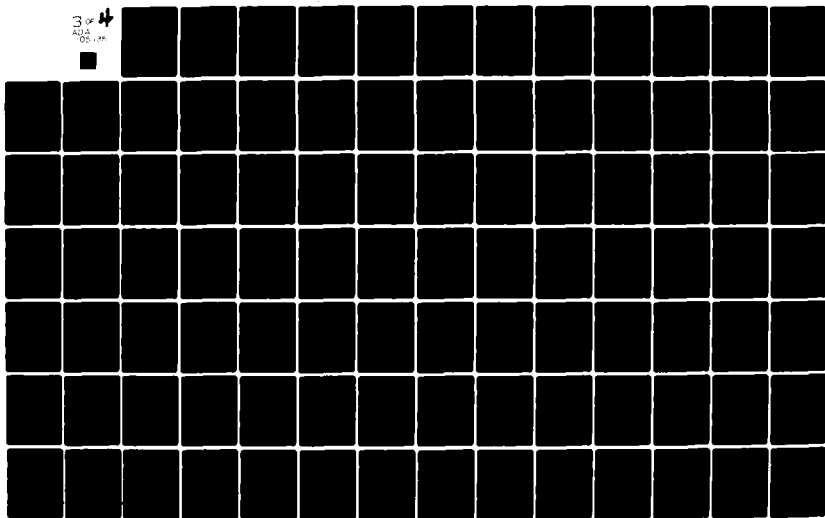
AD-A105 135

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/6 5/9  
PROJECTION OF AIRCREW AVAILABILITY USING VARIABLE ALERT TOUR LE--ETC(U)  
JUN 81 D C KIEVLAN, T W ITTIG  
AFIT-LSSR-38-81

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AD-A105 135







VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L										A																					
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
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R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																														
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		A - Alert O - CCRR L - Leave T - Temporary Duty																																
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
S-01		O						A									A																	
S-02																																		
S-03																																		
S-11		L			L																													
R-12		A									A																							
E-13		A									A																							
R-14		A									A																							
E-15		A									A																							
S-21		O			A																													
R-22		O			A																													
R-23		O			A																													
E-24		O			A																													
E-25		L																																
S-31					T																													
R-33		O																																
R-34		O																																
E-35		O																																
TOTALS																																		

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																														
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
S-01		0	L																															
S-02				A								A											A											
S-03																																		
S-11																																		
R-12																																		
E-13																																		
R-14																																		
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R-22																																		
R-23																																		
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E-25																																		
S-31																																		
R-33																																		
R-34																																		
E-35																																		
TOTALS																																		

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
			Alert Duty Days			Available Duty Days			Non-Available Duty Days																								
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																					
	S-01		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	S-02	L																															
	S-03	A																															
	S-11																																
	R-12																																
	E-13	L																															
	R-14																																
	E-15																																
	S-21	A																															
	R-22	A																															
	R-23	A																															
	E-24																																
	E-25	A																															
	S-31	A																															
	R-33	A																															
	R-34	A																															
	E-35	L-L																															
	TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH											
																																JANUARY											
																																Alert Duty Days				Available Duty Days				Non-Available Duty Days			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01								A																									6	6	15	15	16	16					
S-02	AD																																4	4	15	15	16	16					
S-03																																	3	3	18	18	13	13					
S-11	L																																3	3	17	17	14	14					
R-12	A																																12	12	10	10	21	21					
E-13	A																																12	12	10	10	21	21					
R-14	A																																9	9	12	12	19	19					
E-15	A																																12	12	10	10	21	21					
S-21	O																																										
R-22	O																																										
R-23	O																																										
E-24	O																																										
E-25	L																																										
S-31																																											
R-33	AD																																										
R-34	AD																																										
E-35	AD																																										
TOTALS																																											

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																													
				Alert Duty Days							Available Duty Days							Non- Available Duty Days															
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01		L															L																
S-02					A								A				O																
S-03																																	
S-11																	A																
R-12																	A																
E-13																																	
R-14																	A																
E-15																	A																
S-21																																	
R-22																																	
R-23																																	
E-24																																	
E-25																																	
S-31																																	
R-33																																	
R-34																																	
E-35																																	
TOTALS																																	

ONE-TIME FORM







VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																			
				FEBRUARY																																			
				Alert Duty Days							Available Duty Days							Non Available Duty Days																					
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR		
S-01	L																																	0	6	9	24	19	35
S-02																																		6	11	13	27	15	32
S-03																																		3	6	16	34	12	25
S-11																																							
R-12	A																																	10	12	9	27	19	32
E-13	A																																	10	21	9	19	19	40
R-14	A																																	4	15	9	19	19	40
E-15	A																																	6	15	8	19	20	40
S-21																																		10	21	9	19	19	40
R-22	L-L																																						
R-23	A																																	9	18	7	17	21	42
E-24	A																																	9	18	7	17	21	42
E-25	A																																	9	12	7	18	21	41
S-31																																							
R-33	O																																	9	12	12	24	16	35
R-34	L																																	9	20	10	20	18	39
E-35	O																																	6	14	8	14	20	45
TOTALS																																		112	236	163	354	313	649

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCR L - Leave T - Temporary Duty	MONTH MARCH																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH					
																																MARCH					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	Alert Duty Days	Available Duty Days	Non- Available Duty Days	
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	Alert Duty Days	Available Duty Days	Non- Available Duty Days	
S-01																																5	9	15	41	16	49
S-02																																0	9	11	40	20	50
S-03																																4	13	17	49	14	41
S-11																																9	22	11	35	20	55
R-12																																9	27	13	34	18	56
E-13																																4	22	12	28	19	62
R-14																																9	22	11	33	20	57
E-15																																0	22	11	28	20	62
S-21																																8	27	7	28	24	62
R-22																																12	17	12	36	19	54
R-23																																12	31	12	33	19	57
E-24																																4	22	15	36	16	54
E-25																																12	27	12	32	19	58
S-31																																A	10	24	10	30	60
R-33																																A	10	28	10	31	59
R-34																																A	10	19	10	27	63
E-35																																A	6	19	14	31	59
TOTALS																																124	360	203	572	324	958

ONE TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																														
				Alert Duty Days			Available Duty Days			Non- Available Duty Days																								
17 - 4/5 B				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER																																		
S-01																																		
S-02																																		
S-03																																		
S-11																																		
R-12																																		
E-13																																		
R-14																																		
E-15																																		
S-21																																		
R-22																																		
R-23																																		
E-24																																		
E-25																																		
S-31																																		
R-33																																		
R-34																																		
E-35																																		
TOTALS																																		



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																	9	2	14	44	17	46					
S-02	0	L																															0	10	11	40	20	50					
S-03																																	5	14	14	46	17	44					
S-11																																	9	22	10	36	21	54					
R-12																																	9	31	10	28	21	62					
E-13																																	4	22	12	28	19	62					
R-14																																	9	22	10	32	21	58					
E-15	0																																0	22	10	28	21	62					
S-21																																	4	22	10	28	21	62					
R-22																																	13	17	11	36	20	54					
R-23																																	13	31	11	29	20	61					
E-24																																	4	22	15	33	16	57					
E-25																																	13	27	11	28	20	62					
S-31	0																																9	23	13	35	18	55					
R-33	0																																9	28	13	34	18	56					
R-34																																	9	19	13	29	18	61					
E-35	L-L																																5	19	15	31	16	59					
TOTALS																																	124	360	203	565	324	96					





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-02																																
S-03	O																															
S-11	A																															
R-12	A																															
E-13	A																															
R-14																																
E-15	A																															
S-21	A																															
R-22	L																															
R-23	A																															
E-24	A																															
E-25	A																															
S-31	O																															
R-33	O																															
R-34	L																															
E-35	O																															
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		L																														
S-03																																
S-11		A																														
R-12		A																														
E-13		L																														
R-14		A																														
E-15		A	O																													
S-21		A																														
R-22		A																														
R-23		A																														
E-24		A																														
E-25		A																														
S-31		O																														
R-33		O																														
R-34		L	L																													
E-35																																
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH JANUARY											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																	0	0	21	21	10	10					
S-02	A			O																													3	3	16	16	15	15					
S-03												A														A							9	9	12	12	19	19					
S-11	L																																1	1	19	19	12	12					
R-12																A																	10	10	12	12	19	19					
E-13																A																	10	10	12	12	19	19					
R-14																A																	9	9	12	12	19	19					
E-15																A																	10	10	12	12	19	19					
S-21	O																																9	9	10	10	21	21					
R-22	O																																4	4	6	6	25	25					
R-23	O																																9	9	10	10	21	21					
E-24	O																																9	9	10	10	21	21					
E-25	L																																5	5	8	8	23	23					
S-31																																	5	5	11	11	20	20					
R-33	A			O																													12	12	7	7	24	24					
R-34	A			O																													7	7	6	6	25	25					
E-35	A			O																													12	12	7	7	24	24					
TOTALS																																	124	124	91	91	336	336					

ONE TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH FEBRUARY											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01	L																																0	0	9	30	19	29					
S-02							A															A											9	12	9	25	19	34					
S-03	O																																0	9	16	28	12	31					
S-11	A																																10	11	10	29	18	30					
R-12	A																																10	20	10	22	18	37					
E-13	A																					L											8	18	6	18	22	41					
R-14								T																									2	11	13	25	15	34					
E-15	A																																10	20	10	22	18	37					
S-21																																	9	18	8	18	20	41					
R-22	L-L																																0	4	18	24	10	35					
R-23																																	9	18	8	18	20	41					
E-24																																	9	18	8	18	20	41					
E-25																																	9	14	8	16	20	43					
S-31	O																																9	14	10	21	18	38					
R-33	O																																9	21	8	15	20	44					
R-34	L																																5	12	8	14	20	45					
E-35	O																																4	16	2	9	26	50					
TOTALS																																	112	236	161	352	315	651					



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																																			
				Alert Duty Days			Available Duty Days			Non- Available Duty Days																													
		<div> <div> A - Alert O - CCRR L - Leave T - Temporary Duty </div> </div>																																					
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																		0	0	21	21	10	10
S-02																																		0	0	19	19	12	12
S-03																																		9	9	11	11	20	20
S-11																																							
R-12																																							
E-13																																							
R-14																																							
E-15																																							
S-21																																							
R-12																																							
R-23																																							
E-24																																							
E-25																																							
S-31																																							
R-33																																							
R-34																																							
E-35																																							
TOTALS																																							

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	S-01	L																														
	S-02		A																A													
	S-03	O																														
	S-11																															
	R-12																															
	E-13																															
	R-14																															
	E-15																															
	S-21	A																														
	R-22	L																														
	R-23	A																														
	E-24	A																														
	E-25	A																														
	S-31		A																													
	R-33		A																													
	R-34	L																														
	E-35		A																													
	TOTALS																															







VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																															
S-02																																	
S-03		O																															
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
S-21		A																															
R-22		L																															
R-23		A																															
E-24		A																															
E-25		A																															
S-31		A																															
R-33		O																															
R-34		L																															
E-35		O																															
TOTALS																																	

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH								
	MARCH																																							
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR	
S-01			A																														9	9	11	41	20	49		
S-02	0	L														L																	0	10	11	38	20	52		
S-03																																	0	9	20	51	11	39		
S-11																																	9	21	12	39	19	51		
R-12																																	9	30	12	37	19	58		
E-13	L																																3	21	13	31	18	59		
R-14																																	9	21	12	35	19	55		
E-15	0																																6	27	5	25	26	65		
S-21	A																																8	27	7	29	24	61		
R-22	A																																11	15	13	37	18	53		
R-23	A																																11	30	13	35	18	55		
E-24																																	3	21	16	38	15	52		
E-25	A																																11	27	13	33	18	57		
S-31	0																																11	26	9	28	22	62		
R-33	0																																11	30	9	27	22	63		
R-34	A																																11	21	9	25	22	65		
E-35	L-L																																2	15	19	35	12	55		
TOTALS																																	124	360	204	579	323	951		



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L															L										A					
S-02					A																A							O				
S-03		O																														
S-11		A																														
R-12		A																														
E-13		A																														
R-14																																
E-15		A																														
S-21		A																														
R-22		L	L																													
R-23		A																														
E-24		A																														
E-25		A																														
S-31		O																														
R-33		O																														
R-34		L																														
E-35		O																														
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																														
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-02		L																														
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

ONE-TIME FORM

APPENDIX C  
VARIABLE ALERT SCHEDULES  
UTILIZING 16 CREWS



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																																				
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	0	0	21	21	10	10
S-03																																	0	0	20	20	11	11
S-11																																	7	7	12	12	19	19
R-12																																	7	7	15	15	16	16
E-13																																	14	14	8	8	23	23
R-14																																	14	14	8	8	23	23
E-15																																	14	14	8	8	23	23
S-21																																	10	10	12	12	19	19
R-22																																	7	7	4	4	27	27
R-23																																	10	10	12	12	19	19
E-24																																	10	10	12	12	19	19
E-25																																	3	3	12	12	19	19
S-31																																	7	7	9	9	22	22
R-33																																	7	7	13	13	18	18
R-34																																	7	7	8	8	23	23
E-35																																	7	7	13	13	18	18
TOTALS																																	124	24	187	187	309	309



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH				
	A - Alert O - CCRR L - Leave T - Temporary Duty																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	Alert Duty Days	Available Duty Days	Non- Available Duty Days
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	Alert Duty Days	Available Duty Days	Non- Available Duty Days
S-01	A																															4	7	4	17	45
S-03																																0	7	0	20	52
S-11																																13	27	11	36	20
R-12																																13	27	11	39	20
E-13																																13	34	5	21	26
R-14																																13	27	11	33	20
E-15																																7	28	4	25	27
S-21																																7	28	8	27	23
R-22																																7	21	15	30	16
R-23																																0	21	11	30	20
E-24																																0	21	17	36	14
E-25																																7	14	15	41	16
S-31																																11	28	10	29	21
R-33																																11	28	10	33	21
R-34																																11	21	10	29	21
E-35																																7	21	14	30	17
TOTALS																																124	360	189	536	307

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																																			
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																					
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																						
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																		2	2	18	18	13	13
S-03						A	--	O																									2	2	18	18	13	13	
S-11		L	--	--	--	L																											5	5	14	14	17	17	
R-12		A	--					A	--	--																							12	12	8	8	23	23	
E-13		A	--					A	--	--																							12	12	8	8	23	23	
R-14		A	--					A	--	--																							7	7	13	13	18	18	
E-15		A	--					A	--	--																							12	12	8	8	23	23	
S-21		O	--	A	--																												10	10	14	14	17	17	
R-22		O	--	A	--																												5	5	6	6	25	25	
R-23		O	--	A	--																												10	10	14	14	17	17	
E-24		O	--	A	--																												10	10	14	14	17	17	
E-25		L	--	--	--	--	--	--	--	--	--	L																					5	5	12	12	19	19	
S-31		O	--	--	--	--	--	--	--	--	T																						7	7	6	6	25	25	
R-33		O	--	--	--	--	--	--	--	--																							9	9	9	9	22	22	
R-34		O	--	--	--	--	--	--	--	--																							7	7	6	6	25	25	
E-35		O	--	--	--	--	--	--	--	--																							9	9	9	9	22	22	
TOTALS																																	124	124	177	177	319	319	





VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
			Alert Duty Days			Available Duty Days			Non-Available Duty Days																								
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																	
S-03																																	
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
S-21																																	
R-22																																	
R-23																																	
E-24																																	
E-25																																	
S-31																																	
R-33																																	
R-34																																	
E-35																																	
TOTALS																																	





VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH MARCH																																				
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																						
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																					
	S-01		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	3	10	17	38	14	52
	S-03																A			O					A						L		2	10	17	45	14	45	
	S-11	A-O						A						A									A		O									10	23	10	38	21	52
	R-12	A-O						A						A									A		O								10	30	10	33	21	57	
	E-13	L								L				A									A		O								7	23	10	30	21	60	
	R-14	A-O						A						A									A		O								10	21	11	37	20	53	
	E-15	A-O						A		O							L																3	23	6	29	25	61	
	S-21	A								A							A			O					L								7	26	4	25	27	65	
	R-22	A								A							A								A		O						11	21	8	28	23	62	
	R-23	L																L							A		O						4	23	7	25	24	65	
	E-24	A								A								T															6	20	11	34	20	56	
	E-25	A								A							A								A		O						11	25	8	28	23	62	
	S-31	A																		A														10	27	8	24	23	66
	R-33	A																		A													10	30	8	24	23	66	
	R-34	A																		A													10	23	8	21	23	69	
	E-35	L-L																		A													10	25	8	19	23	71	
	TOTALS																																124	360	151	478	345	962	

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01	A																			A												3	11	19	41	12	49						
S-03	A																															3	10	15	48	16	42						
S-11																																11	25	12	37	19	53						
R-12																																11	32	12	33	19	57						
E-13																																7	25	10	29	21	61						
R-14																																11	21	13	38	18	52						
E-15																																4	25	6	27	25	63						
S-21																																5	25	6	24	25	66						
R-22																																10	20	7	27	24	63						
R-23																																5	19	6	28	25	62						
E-24																																7	27	6	24	25	66						
E-25																																10	26	7	24	24	66						
S-31																																10	24	10	30	21	60						
R-33																																10	28	10	33	21	57						
R-34																																10	21	10	29	21	61						
E-35																																7	21	14	30	17	60						
TOTALS																																124	360	163	502	333	938						



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCh.R L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-03	A																															
S-11	A																															
R-12	A																															
E-13	A																															
R-14																																
E-15	A																															
S-21																																
R-22	L-L																															
R-23																																
E-24																																
E-25																																
S-31	A																															
R-33	A																															
R-34	L																															
E-35	A																															
TOTALS																																

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																															
				Alert Duty Days							Available Duty Days							Non Available Duty Days																	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
CREW NUMBER																																			
S-01																																			
S-03																																			
S-11																																			
R-12																																			
E-13																																			
R-14																																			
E-15																																			
S-21																																			
R-22																																			
R-23																																			
E-24																																			
E-25																																			
S-31																																			
R-33																																			
R-34																																			
E-35																																			
TOTALS																																			

ONE-TIME FORM



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH FEBRUARY								
																																Alert Duty Days			Available Duty Days			Non- Available Duty Days		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR			
S-01	L															L																4	8	4	20	24	39			
S-03	A				O																											4	4	14	35	14	24			
S-11						A		O																								10	14	11	28	17	31			
R-12						A																										10	21	11	23	17	36			
E-13						A																										7	18	6	18	22	41			
R-14						A																										3	10	12	26	16	33			
E-15						A																										10	21	11	23	17	36			
S-21																																7	18	11	20	17	39			
R-22																																4	8	15	21	13	38			
R-23																																3	14	14	23	14	36			
E-24																																7	18	11	20	17	39			
E-25																																7	14	11	18	17	41			
S-31																																11	16	9	21	19	38			
R-33																																11	20	9	19	19	40			
R-34																																7	16	7	12	21	47			
E-35																																7	16	2	12	26	47			
TOTALS																																112	2361	58339	290605					

ONE-TIME FORM





VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-03		A																														
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21		A																														
R-22		L																														
R-23		A																														
E-24		A																														
E-25		A																														
S-31		A																														
R-33		A																														
R-34		L																														
E-35		A																														
TOTALS																																

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
																																Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																	0	8	22	44	9	46					
S-03																																	4	8	18	53	13	37					
S-11	A																																12	24	10	36	21	54					
R-12	A																																12	32	10	31	21	59					
E-13	L																																8	24	10	29	21	61					
R-14	A																																12	24	10	35	21	55					
E-15	A																																4	24	5	26	26	64					
S-21																																	4	24	9	30	22	60					
R-22																																	10	22	11	29	20	61					
R-23	L																																6	26	6	25	25	65					
E-24	A																																7	26	9	31	22	59					
E-25																																	10	26	11	30	20	60					
S-31	A																																9	24	13	33	18	57					
R-33	A																																9	28	13	34	18	56					
R-34	A																																9	20	13	32	18	58					
E-35	L-L																																8	20	14	31	17	59					
TOTALS																																	124	360	184	529	312	911					

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH JANUARY																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	MONTH FEBRUARY																														
		Legend																														
		A - Alert O - CCRR L - Leave T - Temporary Duty																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-03		A							A									A														
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH MARCH											
	A - Alert O - CRRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non- Available Duty Days					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																0	11	22	40	9	50						
S-03																	A			O												3	11	16	47	15	43						
S-11	A							A	O					A																		9	22	13	39	18	51						
R-12	A							A	O					A																		9	30	13	34	18	56						
E-13	L							L						A																		6	22	12	32	19	58						
R-14	A							A	O					A																		9	22	13	37	18	53						
E-15	A							A	O							L																3	24	6	27	25	63						
S-21	A																A		O													8	27	4	26	27	64						
R-22	A																															11	20	10	31	21	59						
R-23	L																															3	19	9	32	22	58						
E-24	A																				T											8	27	8	30	23	60						
E-25	A																															11	24	10	32	21	58						
S-31																																11	24	13	36	18	54						
R-33																																11	30	13	33	18	57						
R-34																																11	22	13	29	18	61						
E-35	L-L																															11	25	13	29	18	61						
TOTALS																																124	360	188	534	308	906						



VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH JANUARY											
		A -- Alert O -- CCRR L -- Leave T -- Temporary Duty																															Alert Duty Days			Available Duty Days			Non- Available Duty Days					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
	S-01																																	8	8	14	14	17	17					
	S-03	A	O																														1	1	19	19	12	12						
	S-11	L																															3	3	16	16	15	15						
	R-12	A																															11	11	11	11	20	20						
	E-13	A																															11	11	11	11	20	20						
	R-14	A																															8	8	14	14	17	17						
	E-15	A																															11	11	11	11	20	20						
	S-21	O																															11	11	8	8	23	23						
	R-22	O																															6	6	2	2	29	29						
	R-23	O																															11	11	8	8	23	23						
	E-24	O																															11	11	8	8	23	23						
	E-25	L																															5	5	10	10	21	21						
	S-31																																2	2	15	15	16	16						
	R-33	A	O																														9	9	12	12	19	19						
	R-34	A	O																														7	7	8	8	23	23						
	E-35	A	O																														9	9	12	12	19	19						
	TOTALS																																124	124	179	179	317	317						

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend A - Alert O - CCRR L - Leave T - Temporary Duty		MONTH FEBRUARY																													
				Alert Duty Days							Available Duty Days							Non-Available Duty Days															
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR												
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01		L																															
S-03		A									A							A															
S-11																																	
R-12																																	
E-13																																	
R-14																																	
E-15																																	
S-21																																	
R-22																																	
R-23																																	
E-24																																	
E-25																																	
S-31																																	
R-33																																	
R-34																																	
E-35																																	
TOTALS																																	



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01																																
S-03								A																								
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH																																				
		MARCH																																				
		Alert Duty Days			Available Duty Days			Non- Available Duty Days																														
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	0	11	22	38	9	52
S-03																																	3	11	16	49	15	41
S-11	A																																11	24	9	34	22	56
R-12	A																																11	32	9	30	22	60
E-13	L																																8	24	8	28	23	62
R-14	A																																11	24	9	34	22	56
E-15	A																																3	24	6	27	25	63
S-21																																	8	27	4	26	27	64
R-22																																	12	18	10	34	21	56
R-23	L																																4	20	9	32	22	58
E-24																																	9	28	8	30	23	60
E-25																																	12	28	10	28	21	62
S-31																																	8	24	14	34	17	56
R-33																																	8	27	14	34	17	56
R-34																																	8	19	14	31	17	59
E-35	L-L																																8	19	14	31	17	59
TOTALS																																	124	360	176	520	320	920

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH											
																																JANUARY											
																																Alert Duty Days				Available Duty Days				Non-Available Duty Days			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																	8	8	12	12	12	12	19	19			
S-03	A	O						A																									1	1	19	19	19	19	12	12			
S-11	L					L																											3	3	16	16	16	16	15	15			
R-12																																	11	11	11	11	11	11	20	20			
E-13	A																																11	11	11	11	11	11	20	20			
R-14	A																																8	8	14	14	14	14	17	17			
E-15	A																																11	11	11	11	11	11	20	20			
S-21																																	11	11	10	10	10	10	21	21			
R-22																																	3	3	6	6	6	6	25	25			
R-23																																	11	11	10	10	10	10	21	21			
E-24																																	11	11	10	10	10	10	21	21			
E-25	L																																8	8	6	6	6	6	25	25			
S-31																																	5	5	10	10	10	10	21	21			
R-33	A	O																															9	9	10	10	10	10	21	21			
R-34	A	O																															4	4	11	11	11	11	20	20			
E-35	A	O																															9	9	10	10	10	10	21	21			
TOTALS																																	124	124	177	177	319	319					

ONE-TIME FORM

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																
		MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR			
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	L																															
S-03	A																															
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH MARCH																																						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	Alert Duty Days	Available Duty Days	Non- Available Duty Days	MO	QTR		
S-01	0																																0	11	22	40	9	50	0	11
S-03																																	3	12	17	49	14	41	3	12
S-11	A																																12	24	9	35	22	55	12	24
R-12	A																																12	32	9	30	22	60	12	32
E-13	L																																8	24	8	26	23	64	8	24
R-14	A																																12	24	9	35	22	55	12	24
E-15	A																																4	24	6	27	25	63	4	24
S-21																																	8	27	5	26	26	64	8	27
R-22																																	11	17	10	32	21	58	11	17
R-23	L																																3	19	9	32	22	58	3	19
E-24																																	8	27	8	29	23	61	8	27
E-25																																	11	27	10	27	21	63	11	27
S-31																																	8	24	14	34	17	56	8	24
R-33																																	8	28	14	34	17	56	8	28
R-34																																	8	20	14	31	17	59	8	20
E-35	L-L																																8	20	14	30	17	60	8	20
TOTALS																																	124	360	178	517	318	923	124	360

ONE-TIME FORM







VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																																				
		Alert Duty Days			Available Duty Days			Non-Available Duty Days																														
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																						
S-03																																						
S-11																																						
R-12																																						
E-13																																						
R-14																																						
E-15																																						
S-21																																						
R-22																																						
R-23																																						
E-24																																						
E-25																																						
S-31																																						
R-33																																						
R-34																																						
E-35																																						
TOTALS																																						

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH FEBRUARY																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																														
S-03		A											A																			
S-11							A																									
R-12							A																									
E-13							A																									
R-14							A																									
E-15							A																									
S-21		A																														
R-22		L																														
R-23		A																														
E-24		A																														
E-25		A																														
S-31		A																														
R-33		O																														
R-34		L																														
E-35		O																														
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH MARCH																												
				Alert Duty Days							Available Duty Days							Non- Available Duty Days														
				MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR															
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	A																															
S-03																																
S-11																																
R-12																																
E-13																																
R-14																																
E-15																																
S-21																																
R-22																																
R-23																																
E-24																																
E-25																																
S-31																																
R-33																																
R-34																																
E-35																																
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH JANUARY											
	A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days				Available Duty Days				Non- Available Duty Days			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																	6	6	14	14	17	17					
S-03	A	O																															1	1	18	18	13	13					
S-11	L																																3	3	17	17	14	14					
R-12	A																																12	12	10	10	21	21					
E-13	A																																12	12	10	10	21	21					
R-14	A																																9	9	12	12	19	19					
E-15	A																																12	12	10	10	21	21					
S-21	O																																9	9	8	8	23	23					
R-22	O																																6	6	2	2	29	29					
R-23	O																																9	9	8	8	23	23					
E-24	O																																9	9	8	8	23	23					
E-25	L																																3	3	11	11	20	20					
S-31	T																																6	6	10	10	21	21					
R-33	A																																10	10	10	10	21	21					
R-34	A																																7	7	7	7	24	24					
E-35	A																																10	10	10	10	21	21					
TOTALS																																	124	124	165	165	331	331					



VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH FEBRUARY											
		Legend																															Alert Duty Days				Available Duty Days				Non-Available Duty Days			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
	S-01	L														L																	0	6	9	23	19	36						
	S-03				A								A									A										9	10	10	28	18	31							
	S-11						A									A																9	12	10	27	18	32							
	R-12						A									A																9	21	10	20	18	39							
	E-13						A									A																6	18	6	16	22	43							
	R-14																															3	12	11	23	17	36							
	E-15																A															9	21	10	20	18	39							
	S-21	A																															10	19	8	16	20	43						
	R-22	L-L																															1	7	18	20	10	39						
	R-23	A																															9	18	8	16	20	43						
	E-24	A																															10	19	8	16	20	43						
	E-25	A																															10	13	8	19	20	40						
	S-31																																9	15	10	20	18	39						
	R-33	O																															9	19	9	19	19	40						
	R-34	L																															6	13	7	14	21	45						
	E-35	O																															3	13	6	16	22	43						
	TOTALS																																112	236	148	31	300	631						



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend																															MONTH JANUARY											
		A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non- Available Duty Days					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01		A																															6	6	16	16	15	15						
S-03		A		O																													2	2	17	17	14	14						
S-11		L																															2	2	18	18	13	13						
R-12																																	11	11	10	10	21	21						
E-13																																	11	11	10	10	21	21						
R-14																																	9	9	11	11	20	20						
E-15																																	11	11	10	10	21	21						
S-21		O																															9	9	10	10	21	21						
R-22		O																															3	3	6	6	25	25						
R-23		O																															9	9	10	10	21	21						
E-24		O																															9	9	10	10	21	21						
E-25		L																															6	6	8	8	23	23						
S-31																																	6	6	10	10	21	21						
R-33		A																															11	11	10	10	21	21						
R-34		A																															8	8	6	6	25	25						
E-35		A																															11	11	10	10	21	21						
TOTALS																																	124	124	172	172	324	324						

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH																														
		FEBRUARY																														
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
S-01	O	L																														
S-03							A																									
S-11	A																															
R-12	A																															
E-13	A																															
R-14																																
E-15	A																															
S-21	A																															
R-22	L																															
R-23	A																															
E-24	A																															
E-25	A																															
S-31	O																															
R-33	O																															
R-34	L																															
E-35	O																															
TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH MARCH																																						
		Alert Duty Days							Available Duty Days							Non- Available Duty Days																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR		
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								
S-01																																	3	9	19	44	12	46		
S-03																																	0	11	19	48	12	42		
S-11																																	9	21	12	39	19	51		
R-12																																	9	30	12	31	19	59		
E-13																																	6	24	8	23	23	67		
R-14																																	9	21	12	35	19	55		
E-15																																	3	24	7	26	24	64		
S-21																																	6	24	9	26	22	64		
R-22																																	12	15	10	34	21	56		
R-23																																	6	24	7	24	24	66		
E-24																																	9	27	10	27	21	63		
E-25																																	12	27	10	25	21	65		
S-31																																	10	25	11	33	20	57		
R-33																																	10	30	11	31	20	59		
R-34																																	10	24	12	26	19	64		
E-35																																	10	24	11	26	20	64		
TOTALS																																	124	360	180	498	316	942		



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH																																				
		FEBRUARY																																				
		Alert Duty Days							Available Duty Days							Non-Available Duty Days							QTR															
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	L																																1	1	9	28	19	31
S-03	O																																0	9	19	32	9	27
S-11																																	9	13	8	24	20	35
R-12																																	9	22	8	17	20	42
E-13																																	5	18	7	16	21	43
R-14																																	4	13	10	22	18	37
E-15																																	9	22	8	17	20	42
S-21	A																																10	19	11	21	17	38
R-22	L-L																																9	13	9	15	19	44
R-23	A																																9	18	11	21	17	38
E-24	A																																10	19	11	21	17	38
E-25	A																																10	15	11	20	17	39
S-31	A																																9	14	11	21	17	38
R-33	O																																9	18	11	22	17	37
R-34	L																																5	9	8	18	20	41
E-35	O																																4	13	6	17	22	42
TOTALS																																	112236	58	322290	612		





VARIABLE ALERT TOUR MODEL DESIGNATOR	MONTH																														
	JANUARY																														
	Alert Duty Days							Available Duty Days							Non- Available Duty Days																
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01	A	O																													
S-03																															
S-11	L																														
R-12																															
E-13																															
R-14																															
E-15																															
S-21	O																														
R-22																															
R-23	O																														
E-24	O																														
E-25	L																														
S-31																															
R-33	A	O																													
R-34	A	O																													
E-35	A	O																													
TOTALS																															

VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH FEBRUARY																														
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S-01		L																															
S-03																																	
S-11		A																															
R-12		A																															
E-13		A																															
R-14																																	
E-15		A																															
S-21		A																															
R-22		L																															
R-23		A																															
E-24		A																															
E-25		A																															
S-31																																	
R-33		O																															
R-34		L																															
E-35		O																															
TOTALS																																	



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																		
				JANUARY																																		
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	A	---	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	2	17	17	14	14
S-03																									A	---	---	---	---	---	---	5	5	16	16	15	15	
S-11	L	---	---	---	L	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6	6	13	13	18	18	
R-12																			0	---	---	---	---	---	---	---	---	---	---	---	---	11	11	11	11	20	20	
E-13																			0	---	---	---	---	---	---	---	---	---	---	---	---	11	11	11	11	20	20	
R-14																			0	---	---	---	---	---	---	---	---	---	---	---	---	9	9	12	12	19	19	
E-15																			0	---	---	---	---	---	---	---	---	---	---	---	---	11	11	11	11	20	20	
S-21	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	9	9	9	9	22	22	
R-22	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	L	---	---	---	---	---	---	---	---	---	---	---	---	---	4	4	6	6	25	25	
R-23	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	9	9	9	9	22	22	
E-24	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	9	9	9	9	22	22	
E-25	L	---	---	---	---	---	---	---	---	---	---	L	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	5	5	8	8	23	23	
S-31																																						
R-33	A	---	---	---	---	---	---	---	---	---	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	5	5	11	11	20	20
R-34	A	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	11	11	9	9	22	22
E-35	A	---	---	---	---	---	---	---	---	---	A	---	---	---	---	---	---	---	---	---	---	---	---	---	L	---	---	---	---	---	---	---	6	6	7	7	24	24
TOTALS																																	124	124	168	168	328	328

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																		
				FEBRUARY																																		
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																				
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	L																																0	2	9	26	19	33
S-03	O																																0	5	19	35	9	24
S-11	A																																10	16	9	22	19	37
R-12	A																																10	21	9	20	19	39
E-13	A																																7	18	6	17	22	42
R-14																																	3	12	12	24	16	35
E-15	A																																10	21	9	20	19	39
S-21	A																																9	18	8	17	20	42
R-22	L-L																																9	13	11	17	17	42
R-23	A																																9	18	11	17	20	42
E-24	A																																9	18	8	17	20	42
E-25	A																																9	14	8	16	20	43
S-31	O																																9	14	12	23	16	36
R-33	O																																9	20	14	23	14	36
R-34	L																																5	11	8	15	20	44
E-35	O																																4	15	4	13	24	46
TOTALS																																	112	236	154	322	294	622



VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend A - Alert O - CCRR L - Leave T - Temporary Duty	MONTH JANUARY																														
			Alert Duty Days							Available Duty Days							Non-Available Duty Days																
			MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR	MO	QTR																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	S-01	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	S-03	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	S-11	L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-12		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	E-13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-14		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	E-15		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	S-21	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-22	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-23	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	E-24	O	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	E-25	L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	S-31		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-33	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	R-34	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	E-35	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	TOTALS																																

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																			
				FEBRUARY																																			
				Alert Duty Days							Available Duty Days							Non-Available Duty Days																					
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01		L																																0	3	9	25	19	34
S-03		O																																0	5	18	34	10	25
S-11		A											A																				10	15	10	24	18	35	
R-12		A										A																					10	20	10	22	18	37	
E-13		A										A																					8	18	6	18	22	41	
R-14																																	2	11	13	25	15	34	
E-15		A										A																					10	20	10	22	18	37	
S-21																																							
R-22		L																																9	18	8	18	20	41
R-23																																		9	13	10	16	18	43
E-24																																		9	18	8	18	20	41
E-25																																		9	18	8	18	20	41
S-31		O																																9	14	8	16	20	43
R-33		O																																					
R-34		L																																9	14	10	21	18	38
E-35		O																																9	21	8	15	20	44
TOTALS																																		112	236	146	315	302	629



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend																															MONTH															
																																	MARCH															
																																	Alert Duty Days				Available Duty Days				Non- Available Duty Days							
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR								
S-01	S-03	A										A					A																		9	12	10	35	21	55								
																																			5	10	14	48	17	42								
S-11	R-12	A										A																																				
E-13	R-14	L																																														
E-15		A										A																																				
S-21	R-22	A																																														
R-23	E-24	L																																														
E-25		A																																														
S-31	R-33	O																																														
R-34	E-35	O																																														
		L-L																																														
TOTALS																																	124360				75				490321950							

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																		
				JANUARY																																		
				Alert Duty Days					Available Duty Days					Non-Available Duty Days																								
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01																																	6	6	14	14	17	17
S-03																																	0	0	19	19	12	12
S-11																																	6	6	13	13	18	18
R-12																																	12	12	10	10	21	21
E-13																																	12	12	10	10	21	21
R-14																																	9	9	13	13	18	18
E-15																																	12	12	10	10	21	21
S-21																																	10	10	12	12	19	19
R-22																																	3	3	7	7	24	24
R-23																																	10	10	12	12	19	19
E-24																																	10	10	12	12	19	19
E-25																																	7	7	8	8	23	23
S-31																																	6	6	9	9	22	22
R-33																																	9	9	9	9	22	22
R-34																																	3	3	11	11	20	20
E-35																																	9	9	9	9	22	22
TOTALS																																	124	124	78	178	318	318

VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend		MONTH																																	
				FEBRUARY																																	
				Alert Duty Days							Available Duty Days							Non- Available Duty Days																			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR
S-01	L																															0	6	9	23	19	36
S-03			A														L	A													9	9	8	27	20	32	
S-11						A																									9	15	10	23	18	36	
R-12						A																									9	21	10	20	18	39	
E-13						A																									6	18	8	18	20	41	
R-14																															3	12	11	24	17	35	
E-15						A																									9	21	10	20	18	39	
S-21			A																												10	20	11	23	17	36	
R-22			L																												2	5	17	24	11	35	
R-23			A																												8	18	12	24	16	35	
E-24			A																												10	20	11	23	17	36	
E-25			A																												10	17	11	19	17	40	
S-31			A																												9	15	8	17	20	42	
R-33			0																												9	18	8	17	20	42	
R-34			L																												6	9	6	17	22	42	
E-35			0																												3	12	6	15	22	44	
TOTALS																															112	2361	5633	4	2926	10	



VARIABLE ALERT TOUR MODEL DESIGNATOR		Legend																															MONTH JANUARY											
		A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days				Available Duty Days				Non- Available Duty Days			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
CREW NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01		A	O																														6	6	15	15	16	16	1	1	18	18	13	13
S-03																																												
S-11		L			L				A			O																				6	6	14	14	17	17							
R-12		A									A																					12	12	10	10	21	21							
E-13		A									A																					12	12	10	10	21	21							
R-14		A									A																					9	9	12	12	19	19							
E-15		A									A																					12	12	10	10	21	21							
S-21																																												
R-22																																9	9	11	11	20	20							
R-23																																3	3	6	6	25	25							
E-24																																9	9	11	11	20	20							
E-25		L																														6	6	9	9	22	22							
S-31																																												
R-33		A	O						A																							6	6	10	10	21	21							
R-34		A	O						A																							10	10	10	10	21	21							
E-35		A	O						A																							10	10	10	10	21	21							
TOTALS																																	124	124	177	177	319	319						

VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend	MONTH FEBRUARY																																				
		<div> <div>A - Alert</div> <div>O - CCRR</div> <div>L - Leave</div> <div>T - Temporary Duty</div> </div>																																				
		Alert Duty Days							Available Duty Days							Non-Available Duty Days																						
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	
S-01	L																																0	6	9	24	19	35
S-03				A															A													9	10	9	27	19	32	
S-11							A																									9	15	10	24	18	35	
R-12							A																									9	21	10	20	18	39	
E-13							A																									6	18	8	18	20	41	
R-14								T																								3	12	11	23	17	36	
E-15							A																									9	21	10	20	18	39	
S-21	A																															10	19	11	22	17	37	
R-22	L-L																															1	4	18	24	10	35	
R-23	A																															9	18	11	22	17	37	
E-24	A																															10	19	11	22	17	37	
E-25	A																															10	16	11	20	17	39	
S-31				A																												9	15	9	19	19	40	
R-33	O			A																												9	19	8	18	20	41	
R-34	L																															6	10	6	16	22	43	
E-35	O			A																												3	13	6	16	22	43	
TOTALS																																112236	158335	290	609			

[illegible]

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AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/6 S/9  
PROJECTION OF AIRCREW AVAILABILITY USING VARIABLE ALERT TOUR LE--ETC(U)  
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VARIABLE ALERT TOUR MODEL DESIGNATOR	CREW NUMBER	Legend																															MONTH JANUARY											
		A - Alert O - CCRR L - Leave T - Temporary Duty																															Alert Duty Days			Available Duty Days			Non-Available Duty Days					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR						
S-01																																		6	6	16	16	15	15					
S-03																																		2	2	17	17	14	14					
S-11																																												
R-12																																												
E-13																																												
R-14																																												
F-15																																												
S-21																																												
R-22																																												
R-23																																												
E-24																																												
E-25																																												
S-31																																												
R-33																																												
R-34																																												
E-35																																												
TOTALS																																												



VARIABLE ALERT TOUR MODEL DESIGNATOR	Legend																															MONTH											
																																MARCH											
																																Alert Duty Days				Available Duty Days				Non-Available Duty Days			
CREW NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MO	QTR	MO	QTR	MO	QTR	MO	QTR				
S-01																																		3	9	19	44	12	46				
S-03	O---			A---			O---																										L-I	0	11	19	47	12	43				
S-11							A---																																				
R-12							A---																																				
E-13	L---																																										
R-14							A---																																				
E-15	O---						A---																																				
S-21	A---																																										
R-22	A---																																										
R-23	L---																																										
E-24	A---																																										
E-25	A---																																										
S-31	O---																																										
R-33	O---																																										
R-34	A---																																										
E-35	L-I																																										
TOTALS																																		124	360	181	518	315	922				

SELECTED BIBLIOGRAPHY

#### A. REFERENCES CITED

1. Berman, Morton B. Scheduling Aircrews and Aircraft: Problems of Resource Allocations in the Strategic Air Command. Rand Document R-1610-PR, Santa Monica CA, January 1975. AD-A011613.
2. Bush, 1Lt Michael D., USAF. "Automated Missile Operations Management System." Unpublished research report, unnumbered, 351st Strategic Missile Wing, Whiteman AFB MO, 8 June 1976.
3. Deputy Commander for Operations, HQ SAC Offutt AFB NE. Message, subject: Alert Management Rules Waiver, to 8AF Barksdale AFB LA/CC/DO, 19 February 1980.
4. Deputy Commander for Operations, HQ 8AF Barksdale AFB LA. Message, subject: Alert Management Rules Waiver, to all 8AF Air Divisions and 8AF Wing Commanders, 22 February 1980.
5. Devine, Major Jerry A., USAF. Tactics Division of Operations and Plans, HQ 8AF Barksdale AFB LA DOXT. Message, subject: Recommended Changes to Alert Management Rules, to HQ SAC Offutt AFB NE DO, 31 January 1980.
6. Fallon, Richard R. Rule-Based Modeling as an Analysis Tool: Implications for Resource Allocations within the Strategic Air Command. Rand Document N-1489-AF, Santa Monica CA, April 1980.
7. Jones, Captain Ronald R., USAF. Chief, Bomber Scheduling Branch, 8AF, Barksdale AFB LA. Telephone interview. 22 September 1980.
8. Marrs, 1Lt Danny D., USAF. "Automated Missile Operations Management System Supplement No. 3 Batch Operation." Unpublished research report, unnumbered, 351st Strategic Missile Wing, Whiteman AFB MO, 15 January 1978.
9. Mitchell, Major Will D., USAF. Operations Systems Management Division, HQ SAC Offutt AFB NE. Telephone interviews. 22 September 1980 and 31 October 1980.
10. Scroggin, Captain James R., USAF. Chief, Missile Training Division, Scheduling Office, 351st Strategic Missile Wing, Whiteman AFB MO. Telephone interviews. 29 September 1980 and 31 October 1980.

11. Strategic Air Command. Training Continuation Program (Phase III). SACR 51-52, Vol. IV. Washington: Government Printing Office, 20 March 1980.
12. \_\_\_\_\_. SAC Alert Procedures. SACR 55-43. Washington: Government Printing Office, 10 October 1979.
13. \_\_\_\_\_. Standardization/Evaluation Program (PA). SACR 60-4, Vol. I, IMC 80-2. Washington: Government Printing Office, 13 January 1978.
14. \_\_\_\_\_. Planning and Scheduling Aircrew and Aircraft Usage. SACR 60-9. Washington: Government Printing Office, 30 June 1980.
15. Wegehaupt, 1Lt Mark S., USAF. "Automated Missile Operations Management System Supplement No.2 24-Hour Alert Scheduling." Unpublished research report, unnumbered, 351st Strategic Missile Wing, Witeman AFB MO, 1 August 1977.

#### B. RELATED SOURCES

- Angell, Lieutenant Colonel David R., USAF. "An Analysis of Missile Crew Scheduling in SAC." Unpublished research report No. 2, Air War College, Maxwell AFB AL, April 1977.
- Ball, Captain Robert L., USAF. "Organizational Illness: Structure as a Prescription for Recovery." Unpublished master's thesis, unnumbered, presented to the Faculty of the University of Oklahoma, Minot AFB ND, 1 April 1979.
- Barnidge, Captain Leroy, Jr., USAF, and Captain Brian H. Cioli, USAF. "The Wing Level Scheduling Process: A System Approach." Unpublished master's thesis LSSR LS-78B, AFIT/LS, Wright-Patterson AFB OH, September 1978.
- Behan, Raymond J. Cost Reduction through Short Interval Scheduling. Englewood Cliff NJ: Prentice Hall, Inc., 1966.
- Conway, Richard W., William L. Maxwell, and Louis W. Miller. Theory of Scheduling. Reading, Massachusetts: Addison-Wesley Publishing Company, 1969.
- O'Brien, James J. Scheduling Handbook. New York: McGraw-Hill Book Company, 1969.

U.S. Department of the Air Force. Strategic Air Command.  
3-52 Aircrew Training. SACR 51-52, Vol. I. Washington:  
Government Printing Office, 1979.

\_\_\_\_\_. Strategic Air Command. Planning and Scheduling  
Aircraft and AGM Usage. SACR 60-9. Washington: Govern-  
ment Printing Office, 1977.